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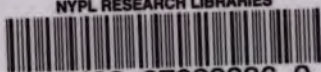
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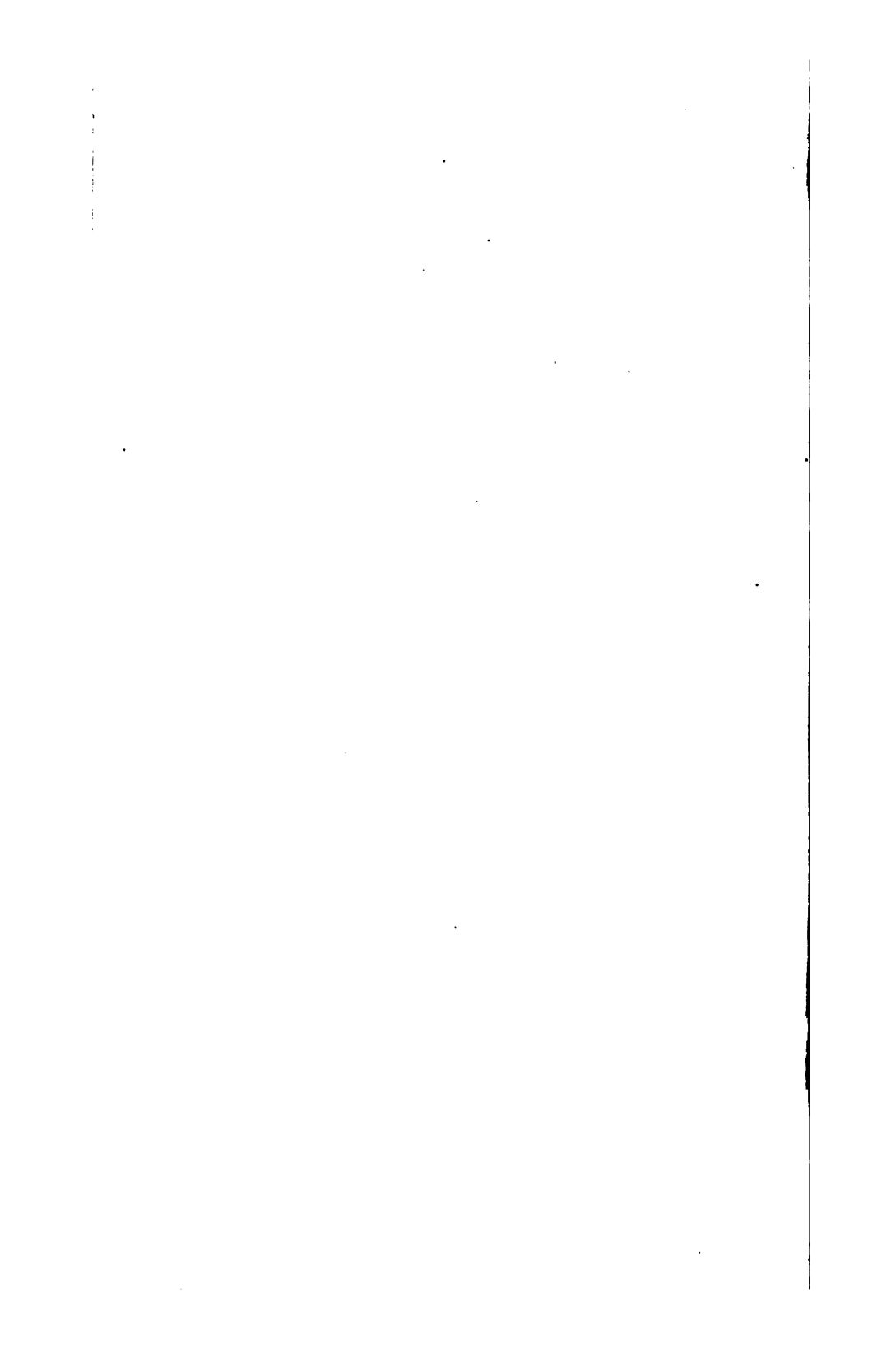
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55 West 23rd St.,

LOGICK;

OR,

AN ESSAY

ON

THE ELEMENTS, PRINCIPLES,

AND DIFFERENT

MODES OF REASONING.

BY

RICHARD KIRWAN, ESQ. LL.D.

P.R.I.A. F.R.S. &c. &c.

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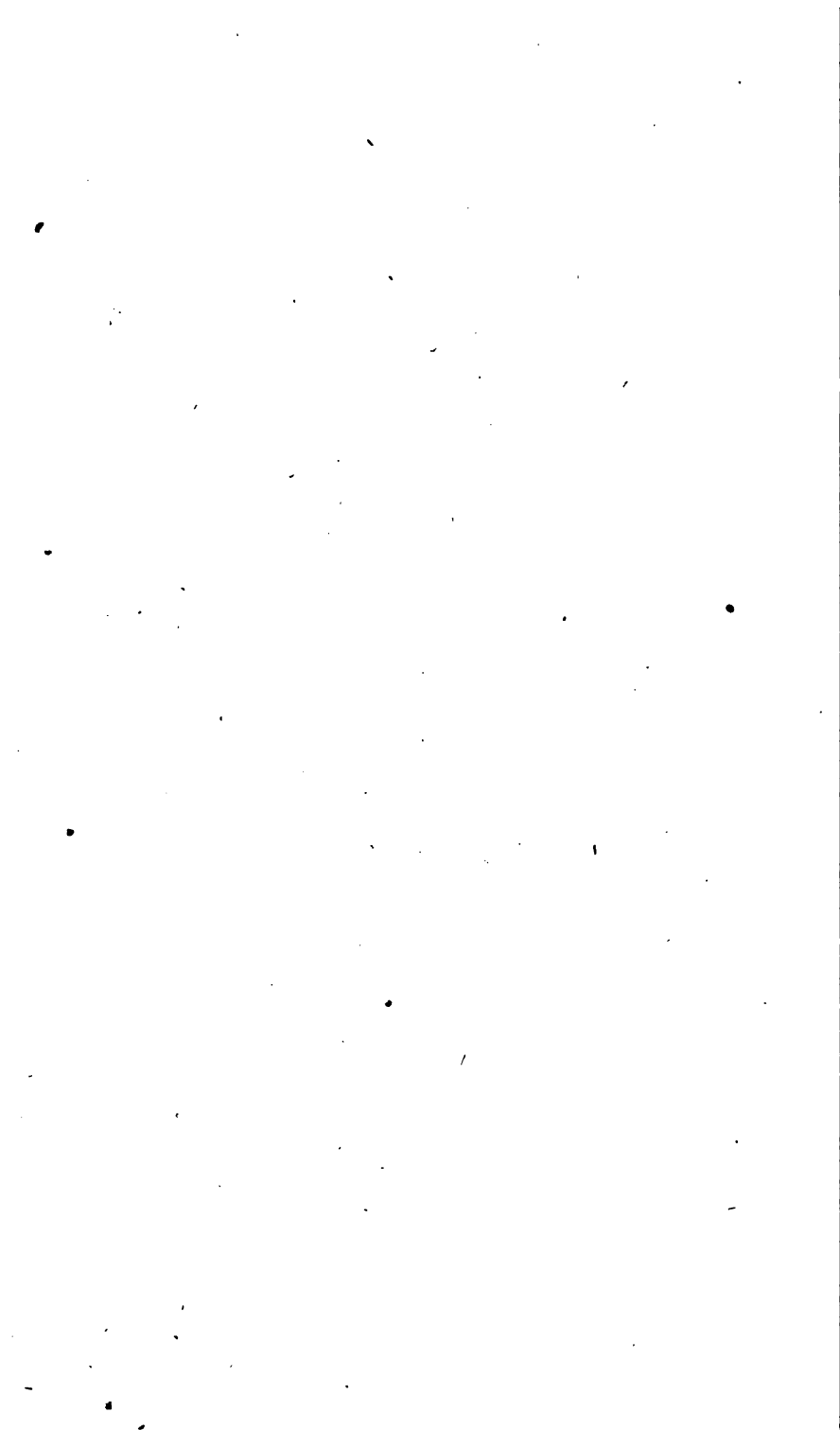
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TO THE
RIGHT HONOURABLE
LORD BARON NORBURY,
CHIEF JUSTICE OF THE COURT OF COMMON
PLEAS IN IRELAND,
IN TESTIMONY OF THE HIGH ESTIMATION
IN WHICH
NOT ONLY HIS PRIVATE VIRTUES,
BUT PARTICULARLY THE
ABILITY, DILIGENCE, AND IMPARTIALITY,
MANIFESTED IN
THE DISCHARGE OF HIS JUDICIAL DUTIES,
ARE HELD
BY HIS DEVOTED
HUMBLE SERVANT,
THE AUTHOR.



P R E F A C E.

THOUGH to reason be natural to man, yet experience too fully proves, that his reasonings on most subjects, are frequently erroneous. The true way of detecting and avoiding errors in any subject, is to examine the accuracy of the elements, principles, or mode of reasoning, on which a conclusion is founded. Now, the elements of reasoning are *words*, the principles are the fundamental propositions or maxims affirmed or denied, and the modes of reasoning are the various forms in which the propositions of which it consists, are presented and connected with each other.

Hence, the proper object of logick, is to determine with precision, the exact signification of *words*, in what relation soever they may stand, the general and particular properties and varieties of *propositions*, the nature of ratiocination, the validity of the grounds on which it rests, and, lastly, the means of investigating truth. Of so comprehensive an object, nothing more explicit can here be said; but more light will be thrown on this

a 3

statement,

person for reasoning justly on any other subject, for, accustomed to the highest degree of evidence, a mathematician frequently becomes insensible to any other. Thus *D'Alembert*, one of the ablest mathematicians of the last century, was, as *Mr. La Harpe* tells us,* a sceptic in every thing else; though under the guidance of no unruly passion, his letters shew him to have been an inveterate enemy to Christianity. *Condorcet* was not less so. *Proclus*, an eminent mathematician of the fifth century, wrote most absurdly on other subjects, and particularly a refutation of the Christian religion. *Fatio*, a distinguished mathematician of the beginning of the last century, became a downright fanatic.† *Bishop Warburton*‡ tells us, that the oldest mathematician then in England, was the worst reasoner in it. *Barbeyrac*, in the preface to his translation of *Grotius, De Jure Belli et Pacis*, informs us, that a mathematician undertook to refute it, but of this refutation he says, “on n’a jamais rien vu de plus pitoyable, et on seroit surpris qu’un mathématicien pût si mal raisonner, si l’on n’avoit d’autres exemples bien plus illustres, qui montrent clairement que l’étude

* *Lycée*, vol. 15. p. 129.

† *Hist. Acad. Berl.* 1792. p. 12.

‡ *Preface to Julian*, p. 21.

“ des

“ des mathematiques, ne rend pas toujours l'esprit
 “ plus juste en matiere de choses qui sont hors de
 “ la sphere de ces sciences.” And *Le Clerc* re-
 marks, “ qui assueti sunt mathematicis ideis, quæ
 “ facillime a se invicem distinguuntur, et animad-
 “ vertuntur, ubi volunt secundum notæ artis regu-
 “ las de rerum publicarum aut domesticarum
 “ administratione judicare, ineptissima ferunt ju-
 “ dicia.”*

The chief advantage possessed by mathematical science, results from the clearness of its definitions, at least of such as are necessary for its demonstrations, and the simplicity of its signs, which are objects of sense. But logic requires equally clear definitions of the sense in which the terms it employs should be taken, though, from the intellectual nature of its object, they cannot be exhibited to the senses. Many mathematical, (indeed unnecessary) definitions have been contested even by mathematicians themselves, such as the definition of *number*, differently given by Euclid, Stevinus, and Sir Isaac Newton.† Nor, have they

* *Logic*, vol. i. p. 150. And Condillac says, “ nous
 “ avons quatre metaphysiciens celebres, Descartes, Mal-
 “ branche, Leibnitz, et Locke; le dernier et le seul, qui ne
 “ fut pas geometre, et de combien n'est il pas superieur aux
 “ trois autres ?” Condill. vol. vi. p. 225, in 12mo.

† Hutton's *Mathem. Dict. Number*.

even agreed on the definition of *magnitude*,* and as to habituating the mind to intense application, there is no science that does not equally require it, and in studying it, the habit is much more advantageously obtained. So far are mathematics from being necessary to logick, that, on the contrary, logick is frequently necessary for detecting the errors of a mathematician, of which instances may be seen in the logick of Port Royal, part. iv. chap. iv. and v. and Encyclop. Mathem. *Infini*. If logick has had its sophisms, mathematics has had its paralogisms, and algebra, in particular, many absurdities. Nay, the frame of mind necessary to constitute a great dialectician, seems different from that necessary to constitute a great mathematician, for it is said, that Bayle could not understand Euclid; 12 *Bibliothèque choisie*, p. 223.

But though mathematics cannot supersede the study of that part of logick, which treats of the signification of words, the genuine import of different propositions, the nature of ratiocination, and rules of interpretation, yet they appear to me of great use, in estimating the degrees of probability, a subject which hitherto has not been comprised, (no more than the general rules of inter-

* Encyclop. Mathem. *Grandeur*.

pretation,)

pretation,) in any treatise of logick, or, at least, very slightly noticed. Of probability in general, I have treated at large, and found no other branch of mathematics necessary, but common arithmetic, when the probability of testimony only is concerned. In other cases, the inestimable works of the late excellent Dr. Price, and of Mr. Morgan, should be consulted.

Omitting those writers, who, to very little purpose, but with great ingenuity, have applied the rules of probability to various games, I believe Sir W. Petty was the first that applied them to important objects; and Leibnitz,* in the year 1669, applied them to political reasoning, in a tract, which he composed on the occasion of an election of a king of Poland. He tells us,† “ La
 “ philosophie pratique, est fondée sur l’art d’esti-
 “ mer les degrés des probations qui ne se trouvent
 “ pas encore dans les auteurs logiciens. Plusieurs
 “ argumens, probables joints ensemble, font quel-
 “ quefois une certitude morale, et quelquefois non ;
 “ il faut donc une methode certaine pour pouvoir
 “ determiner. On dit souvent avec justice, que
 “ les raisons ne doivent pas être contées, mais
 “ pesées ; cependant personne ne nous a donné
 “ encore, cette balance qui doit servir, a peser la

* 6 Leibn. 243.

† Ibid. 246.

“ force

“force des raisons, c’est un des plus grands défauts de notre logique.” This defect I have endeavoured to supply, partly from my own meditations, and partly from the works of *Condorcet*.

Mr. Locke, whose bile was excited by the ridiculous jargon, which in his time assumed the name of logick, seems to reject this science entirely; for, from what else but peevishness could he have said, “that a man of ordinary capacity well understands a text or a law that he reads, till he consults an expositor, or goes to counsel; who, by the time he has done explaining them, makes the words signify either nothing at all, or what he pleases.”* His objections to syllogisms, proceeded from the same temper, and will be considered in the body of this work.

The celebrated *Dr. Blair* judged more coolly, and more justly, “that even where nature dictates the use (of any of our faculties,) it will not follow thence, that rules are of no service; all science arises from observations on practice. Practice has always preceded method and rule, but method and rule have afterwards improved

* Like a certain judge in this country, about seventy years ago, who continually fretted when a lawyer spoke in reply, saying, that he always perplexed what was before perfectly clear.

“and

“ and perfected practice in every art. We every day
“ meet with persons who sing agreeably without
“ knowing one note of the gamut, yet it has been
“ found of importance to reduce these notes to a
“ scale, and to form an art of music; and it
“ would be ridiculous to pretend that the art is of
“ no advantage, because the practice is founded in
“ nature.”*

The knowledge of logick is of the highest importance in all controversies, wherein reason alone presides, particularly in the commonest of all, legal controversies: the science of special pleading, in particular, is founded on the strictest observation of its rules; so is also the art of taking just exceptions to answers; of detecting the fallacies of arguments; of briefly collecting and presenting them in their full force; in laying down and applying the rules of evidence, according to the subject matter; in assigning and applying the due interpretation of words or clauses in statutes, covenants, agreements, deeds, devises, &c. The rules of evidence, with respect to facts, should be diligently attended to in these countries, where all men are liable to be set on juries, and particularly by justices of the peace, to whose decision many matters are referred, and even, in many cases, the

* I have applied to logick what Dr. Blair says of figurative language.

liberty

liberty of the subject. Hence, the great and virtuous judge, Sir John Eardly Wilmot, in a letter to his son, whom he intended for the legal profession, tells him, “logick is certainly dry and unenter-
 “taining, but stretch all the nerves and sinews of
 “your mind to attain it, for it is of infinite use in
 “setting a keen edge upon the understanding, and
 “besides it gives an eagle eye in detecting false
 “reasoning and sophistry. I never knew an able
 “logician who did not acknowledge and feel the
 “utility of it in forensic practice.”

The nature of propositions in general, and their precise signification in whatever manner modified, their various relations, the extent of the truth or falsehood resulting from these relations, and also the laws of ratiocination, have been explained with tolerable accuracy by many of the scholastics, and most successfully by the Nominalists; but the gleam of light which they diffused on these, and many metaphysical subjects, was too strong for the age in which they lived; they were soon overpowered by their numerous adversaries, and their writings at present can with difficulty be procured.* The intolerant bigotry of the ages that preceded the

* They are scarcely mentioned by any of the moderns, but the celebrated Professor Dugald Stewart, in his excellent treatise on the Philosophy of the Human Mind. Chap. iv. sec. 3, see also, 4 Leibn. 59.

reformation,

reformation, confined the vigorous exertions of men of the greatest mental abilities to subjects the least important. Thus shackled, they were compelled to display their ingenuity on questions the most frivolous and futile, often unintelligible; yet, amidst their worthless dross, many questions may be found, which, though apparently silly, are in reality connected with the most important inquiries, whether political or theological. For instance, the first article of the parliamentary impeachment of the Despencers, in the reign of Edward the II^d. relates to the scholastic question, *utrum relatio terminetur ad absolutum an ad relativum*. This Leibnitz acknowledges. *Scholasticos agnosco abundare ineptiis sed aurum est in illo cæno*.*

Hence I have retained such of their observations and distinctions, as seemed to me important and conducive to accuracy and precision; their cumbersome treatise on syllogisms, I have curtailed and modified. Condillac indeed, (an excellent metaphysician) rejects, as useless, the detail of the varieties of propositions,† but it is plain he has not considered the necessity of noticing them in legal and theological controversies. In this treatise I have inserted every observation

* Operum, vol. v. p. 355.

† Art de Penſer, chap. 10. ad finem.

that appeared to me useful to reasoning on any important subject, and endeavoured to prevent the disgust frequently concomitant on abstruse researches.

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LOGICK.

PART I.

OF THE ELEMENTS OF REASONING.

CHAPTER I.

OF THE OBJECT OF LOGICK, AND DEFINITIONS OF SOME GENERAL TERMS.

1. **LOGICK** is both a science and an art; it is a *science* in as much as by analysing the elements, principles, and structure of arguments, it teaches how to discover their truth or detect their fallacies, and point out the sources of such errors. It is an art inasmuch as it teaches how to arrange arguments in such manner that their truth may be most readily perceived, or their falsehood detected.

2. All arguments are expressed by *signs*, the most usual of which are *words*.

3. Words connected or disconnected by any mental operation or affection are called *propositions*;
B

sitions; thus *God is good* is a proposition, as goodness is affirmed of God. *Good God!* is also a proposition, as the connexion is formed by the sentiment of admiration. *Stand Sun* is also a proposition, the words being connected by an act of the will, that is, Sun be thou standing, &c.

4. But the connexion or disconnexion most usual in reasoning, consists either in *affirming* that connexion, or *denying* it, with some, or without any limitation; of such propositions therefore only, I mean here to treat. One proposition is frequently equivalent to two propositions; particularly when the connexion is not expressly founded on the relation of identity. Thus when it is said that *God created the world*, this is equivalent; first, the *world was created*; and, secondly, the *Creator was God*.

5. Hence words may be considered in their relation to propositions; first as they are significative of things; or, secondly, as to their mode of signifying things; thirdly, as relative to each other. But, before we proceed further, it is necessary to define the terms here employed.

6. *Science*

6. *Science* is a system, that is, an arranged collection of truths immediately or mediately deduced from first principles.

7. *Art* is the practical knowledge of executing its particular objects.

8. *Principles* of any science, are the first truths from whence others are derived.

9. *An argument* is a proposition tending to evince the truth or falsehood, or doubtfulness, of some disputed assertion.

10. *Reasoning* is the deduction or inference of one proposition from two other propositions, one of which is often not expressed but always understood.

11. *Truth* here denotes the conformity of *signs*, or propositions with the objects they announce or express. Thus a weather-cock which denotes a W. wind, when such a wind really exists, announces a *truth*; but if it marks a N. wind, when the wind is at west, it announces a *falsehood*.

12. A *sign* is that which, besides its own appearance, denotes or suggests something else: * thus the print of a man's foot, besides

* Hence all signs as such are relative.

15. Then the truth is, that words signify *things*, that is as many properties as are known to the speaker to appertain to any thing.

16. By *things* I mean any perceptible or intelligible objects; of these, many are observed to be referable to and accompany each other, and therefore to be indicated by the same *name*. Thus a particular taste, smell, colour, degree of hardness, and coherence, being observed to accompany each other and apparently to belong to the same tangible object, the aggregate is called an apple; another group of sensible objects is called a *pear*, another *wood*, *iron*, *stone*, &c.; all such aggregates of objects concomitantly perceived by our senses, and impressed in a stated regular manner on all sensitive beings, have distinct names; and the particular appearances that compose each aggregate, are called the *properties* of these aggregates. The word then that denotes the aggregate, denotes explicitly and includes all the known properties of the aggregate, without excluding any that may hereafter be known to be comprizable therein. The name, denoted at first only the most obvious properties; for instance, the shining yellow

yellow colour of gold, its hardness, malleability, weight, and fusibility. None but a child could affix this name to colour alone ; but by degrees, its less obvious and relative properties were discovered : it was found to be heavier than an equal bulk of any other body then known ; that it was more malleable and ductile than any other metal ; that it was more fusible than iron, &c. though less so than tin or lead : these properties were generally known ; chymists discovered many other properties which it exhibits when exposed to other bodies in various circumstances, which are not yet nor ever can be exhausted. Thus this word, in the minds of different men, comprehends a greater or lesser number of properties, and the same may be said of all other sensible aggregates.

17. The properties comprehended in the signification of a word, of which, if any were omitted, it would cease to denote the aggregate on which it was originally bestowed, and also those properties which were subsequently found to appertain to it, are called the *comprehension* of that word, or the word is said to comprehend them. Thus gold comprehends

in its signification, not only that bright colour, weight, malleability and fusibility, to whose complexity that name was originally imposed, but also its solubility in *aqua regia*, its fixity in a strong heat, its affording a blue or purple precipitate with tin, &c. &c. ; if a metal were found which possessed all these properties but one, it would either not be called gold, or at least it would be called *a different species of gold*. So liquidity being one of the properties, to the aggregate of which the name *water* was originally bestowed ; when hardened by cold, it is no longer called water, but *ice*. Yet though hardness was one of the properties on the aggregate of which the name *gold* was originally imposed, nevertheless, when this hardness disappears, and liquidity is introduced by heat, the melted gold is still called gold, and does not acquire a new name for two reasons ; first, because in its melted state it is seen by few, and does not interfere with the common concerns of human life, (as water in its solid state does) ; and, secondly, because the melted state is evidently forced and the result of art ; for if the gold be left to itself, it naturally returns to its primitive hardness.

18. Though

18. Though words are arbitrary in their primitive institution, yet when once their signification is fixed, we are no more entitled to alter it than to call a tree an elephant; for, being no man's private possession, but the common measures of commerce and communication, it is not for any one at pleasure to change the stamp they are current in; at least where there is a necessity to do so, notice of it should be given.*

19. From the similarity of the thinking principle in the general mass of mankind, it might naturally be expected that in expressing the objects of their thoughts, a similar uniformity, if not of the sounds, at least of the signification denoted by those sounds, should also be found; and indeed in one class of perceptions, namely, that of *sensations*, such uniformity of significations is really found: thus all men agree in giving to different colours sufficiently distinct, different distinct names in their different languages. What in English one man calls *white* or *red*, all other men using the English language call by the

* Locke, Lib. III. cap. xi. sec. 11.

same names. No difference occurs except in expressing the degrees of intensity of the same colour, or the nearly approaching shades or mixtures of other colours, which in no language have obtained simple specific names generally known, though many perhaps are distinctly expressed by artists particularly occupied about them, as painters, dyers, jewellers, &c. ; thus also the sensations of high and low sounds, of sweet, bitter, and sour tastes, of heat, cold, hard, soft, rough, smooth, and other tactile sensations, have among all nations obtained particular, distinct, verbal expressions universally agreed upon. Now the principle from which this general agreement arises is, that these sensations being impressed by an external cause, universally acting on all men, with perfect uniformity in the same circumstances, and while their respective organs of sensation are in their natural healthy state, could not fail of receiving, respectively, similar verbal indications.

20. So also the distinct operations of the mind, *willing*, *reasoning*, and *remembering*, are too obviously different to have been ever confounded, and the same observation may be extended

extended to the more distinct mental passions, as *love, hatred, anger, grief, fear, &c.*: accordingly they do not want appropriate distinct expressions in any language.

21. But when other states of the mind, whose accurate discrimination was of less importance to social intercourse, became the subject of philosophic inquiry, the uniform designation of the precise meaning of the terms employed to denote them, necessarily became more difficult; nor were the same terms always employed in the same sense, even by the same author. The difficulty of pointing out the more latent states of the mind could no otherwise be removed, than by assimilating these states to the sensations and sensible operations to which they bore some analogy, and applying to them similar expressions.*

22. Though by adopting this artifice, it might be expected that the more latent mental states would be pointed out with the same clearness, perspicuity, and accuracy, as are found in the expressions of sensible objects; yet as the analogies, on which their denomi-

* Condillac, 1 Gram, 210.

nations are founded, are not confined to one set of sensible objects, but may be found betwixt these mental states and other sets of sensible objects, the denominations may be different. Thus the mental view of an absent sensible object which originally was perceived by the sense of seeing, was by some denominated an *idea*, that is an *appearance*, from its resemblance to the original sensation; but also, as in this second view of the object, it was as if it were *caught* by the mind, its exhibition, in that respect, bearing some analogy to the sense of *touch* when objects are *grasped*; it was by some called *apprehension*, and by others *conception*.

23. The celebrated Mr. Horne Tooke, in a very subtle and ingenious work, has shewn that even those particles that denote the relations of objects or of sentences with each other, originated from circumstances apparent to the senses.

24. Imperfect as some of these analogies may be, yet if any of them had been rigidly adhered to and suitable denominations adopted, much perplexity and ambiguity might have been avoided in metaphysical researches; from
their

their frequent, or absolute neglect, together with the doctrine of abstract ideas, that obscurity and confusion have arisen which have brought the science of metaphysics into utter contempt. *

25. To dissipate this obscurity, and prevent all ambiguity, we need only to define the precise signification of the terms employed, grounded on the closest analogies, either to sensations, or to the most distinct and generally-known operations, perceptions, or emotions of the human mind, and point out the true signification and use of abstract terms.

25. * Of all the terms expressing whatever the mind is conscious of, the most general is *state*, it being applicable to every case in which the vital principle of mind can be supposed to exist; it is evidently grounded on the analogy betwixt the condition of the mind and that of bodies, which necessarily exist in some state or other.

26. *Perception* is the next most general term expressive of mental states, but it denotes only the *passive* states, as sensations, ideas, sentiments, and passions, but not the

* See Edgeworth on Education, Vol. III. p. 130, 8vo.

active,

active, as judgments and volitions : its etymology sufficiently shews that it first denoted tactile sensations, but was after extended to the visual ; and, finally, to all other sensations in which the mind is passive, and thence by analogy it denoted other passive mental states.

27. However, words that do not denote sensible objects, but the more hidden states of the mind, as ideas faculties, operations, and notions, are to be understood in any esteemed author in the sense in which he employed them, let that sense be, as we think, ever so improper.

28. Thus as Mr. Locke, contrary to the usage of most other writers, by *knowledge* means the agreement of ideas, we must in reading him take it in that sense. Originally it denoted corporeal strength ; but afterwards, as science was found in many cases equivalent to strength, it was taken in that sense. It is derived from *kunna*, which in the Gothick had both those senses. See Ihre's Dictionary.

29. By *judgment* Mr. Locke denotes conjecture, or a decision of probability : in this also he is singular.

30. A very important mistake with respect
to

to the use of words has been committed by most writers, previous to the age of the discerning Berkeley, in supposing that general words primarily denoted general abstract ideas. * For since it is certain that ideas are transcripts of things perceived by sense, it is evident that since no *general* thing exists, but all existing things are particular, so ideas must be the transcripts of particular things only: thus as all the men now existing (or that have ever existed) are particular individuals, and as no such thing can exist as *man in general*, so all ideas of men must be the ideas of particular men, and not of man in general, unless the idea of one particular man may be said to represent, as it does in many respects, *all men*. Thus a line an inch long, may be said to represent a line of any length; for when a geometrician requires you to draw a *line*, he leaves it to your choice to draw a line of any length you please; or if he requires you to form,

* I say *most* writers, because the Nominalists, who first perhaps since the Christian *Æra* made this observation, were generally condemned, neglected, and forgotten. Dr. Gillies has shewn that this truth was known even to Aristotle. See his *Analysis*, Vol. I. p. 69.

a tri-

a triangle, without saying any thing more, he leaves it to your choice to form an equilateral triangle, an isocles, or a scalenum. Which ever of these you form, it represents all the others in the general properties of a triangle. Thus the proposition, that the three angles of a right-lined triangle, are equal to two right angles, is equally true with respect to any of the abovementioned.

31. The origin of general words is well explained by Mr. Locke, * omitting only his mention of general ideas. Nothing is more evident, says he, than that the ideas of the nurse, father, and mother, are, like those persons themselves, only particular, and their names are confined to them; but afterwards children find there are a great many other persons, who in shape and other qualities resemble their father; these, as well as their father, they hear called *men*, and thus they find that the word *man* may indifferently be applied to each or any of them; and as thus they come by the general *name man*, they easily advance to names still more general; for,

* Locke, Book III. cap. iii. sec. 6, 7. Condillac, 1 Gram. 180, 12mo.

observing

observing several things that differ from men, and therefore cannot be comprehended under the name *man*, have yet certainly qualities ~~wherewith~~ they agree with men, as body, life, sense, and spontaneous motion: they denote these united qualities by a term of still greater generalization, and comprehend them under the name *animal*. Hence it is as unnecessary as it is impossible, that general words should denote general abstract ideas; all that is necessary to understand their meaning is, that a meaning or notion should be annexed to them applicable to various persons or things, or that they should denote a particular idea that represents an indefinite number of other particular ideas.

32. There is also a circumstance which rendered this subject dark and intricate, first discovered by Dr. Berkeley, which must appear surprising to every one; namely, that words are understood even when they excite no distinct idea or notion whatsoever. Thus the words or figures 102 and 108, for instance, are well understood, and the latter known to exceed the former, though we can form no idea or representation of either of these

numbers abstracted from the words or figures that denote them ; nay, not even if they were applied to particular things. It is then sufficient that we should know that their precise meaning was once *definitely* understood by us, and may still, if investigated, be clearly assigned and enumerated ; nay, the ideas even of sensible things do not arise in our minds, when the words that denote them are heard. Supposing, says Mr. Burke, we were to read a passage to this effect:—" the river Danube
 " rises in a moist and mountainous soil in the
 " heart of Germany, where winding to and
 " fro it waters several principalities, until
 " turning into Austria and leaving the walls
 " of Vienna, it passes into Hungary ; there,
 " with a vast flood augmented by the Save
 " and the Drave, it quits Christendom, and
 " rolling through the barbarous countries
 " bordering on Tartary, it enters by many
 " mouths into the Black Sea." In this description many things are mentioned, as mountains, rivers, and the sea ; but let any one examine and see whether he has had impressed on his imagination any pictures of a river, mountain, city, watery soil, Germany, &c. :

it

it is indeed impossible in the rapidity and quick succession of words in conversation. He adds, " when I speak of red, blue, and " green, I have no actual ideas of those colours; I know I can have them, but then " an act of the will is requisite, and they must " be applied to some particular objects; in " conversation, it is very rarely that any image " at all is excited in the mind, as every one " may experience."

33. This observation holds still more strongly with respect to words that denote complex notions (the mixed modes of Mr. Locke), and which I shall call complicative words.* These are abbreviations of other words denoting both passive and active states of the mind connected with each other; for instance, a *sentiment and an action*. Thus the word *benificence* denotes particular actions performed in particular circumstances, and also a sentiment of approbation of such actions.

The word *virtue* is more general, and denotes actions to which a sentiment of approbation is annexed, as the word *vice* denotes

* 6 Condillac, 37, 71, and 91.

generally all actions to which sentiments of disapprobation or horror are annexed ; now it is certain that in the signification of most of these words, and particularly of those that denote virtues or vices, as *liberality, generosity, or murder, adultery, &c.* or any thing generally approved or disapproved, these *sentiments* chiefly predominate, and no precise representation of the things or actions which they also denote, is actually raised in the mind. Hence, as Locke himself observes, “ most men make use of words instead of ideas, at least when the subject of their meditations contains complex ideas.—For the ideas these words stand for, being for the most part imperfect, we reflect on the names themselves, as they are more clear, certain, and distinct; the name occurs much more readily than the complex idea, which requires time and attention to be exactly recollected and represented to the mind, even by those who have formerly been at the pains to do it, and is impossible to those, who, though they remember the greatest part of the common words of their language, yet never considered what precise ideas most of them

“ stand

“ stand for: thus many talk of religion, con-
 “ science, power, right, church, &c. of which
 “ they have only confused or obscure notions.”
 Locke, lib. iv. cap. 5. sec. 4.

34. Yet though these words do not im-
 mediately suggest any ideas, still, as Mr. Burke
 justly remarks, “ being used on any particular
 “ occasion wherein we receive some good or
 “ suffer some evil, or see others affected with
 “ good or evil, or which we hear applied to
 “ other interesting things or events, and ap-
 “ plied in such a variety of cases, that we
 “ know readily by habit, to what things they
 “ belong, they produce on the mind, when-
 “ ever they are afterwards mentioned, effects
 “ similar to those of their occasions.” Essay
 on the Sublime, part v. sec. 2. And the pe-
 netrating Berkeley long before remarked, that,
 “ words which might at first have occasioned
 “ ideas fit to produce the passions of *fear, love,*
 “ *hatred, admiration, disdain, &c.* afterwards,
 “ when language grew familiar, on hearing
 “ the sounds or seeing their characters, those
 “ passions are immediately excited without
 “ the intervention of those ideas. Thus we
 “ are affected with the promise of a *good thing,*
 C 3 “ though

“ though we have not an idea of what it is :
 “ even *proper names* themselves (which are
 “ neither general nor complexive), do not
 “ seem always spoken with a design to bring
 “ into our view, the ideas of those individuals
 “ that are supposed to be marked by them ;
 “ for example, when a scholastic tells me
 “ *Aristotle hath said it*, all I conceive he means
 “ by it, is to dispose me to embrace his opinion,
 “ with the deference and submission which
 “ custom has annexed to that name : an effect
 “ so instantly produced, that it is impossible
 “ that an idea either of his person, writings,
 “ or reputation should go before.” Berkeley’s
 Introduction, &c. sec. 20.

35. Note however, that though words do
 not immediately suggest the objects they de-
 note, no more than counters, in gaming, dis-
 cover instantaneously the sums of money they
 stand for, or the letters x and y in algebra the
 unknown quantities they denote ; yet it is ne-
 cessary that, when strictly attended to, their
 connexion with their objects should be dis-
 cernible, otherwise the sentence of which they
 make a part would be nonsensical or unintel-
 ligible.

36. And

36. And we must further remark, that this connexion may be more or less perfectly distinguished, even when closely attended to; it is perfectly seen when the object signified is immediately discernible, without reference to any other object, so the signification of the words *man, house, mountain, &c.*; but it is *imperfect* when the thing signified is understood only by its relation to some object more fully understood. Thus, in the proposition, *one more x is equal to the square root of two*, or in other words, one, with an additional but unknown fraction, would exhibit a number, which multiplied into itself would be equal to, or at least approach very nearly to two: here the fraction to be added to *one* is unknown, yet the property it has of exhibiting, when investigated, a number which with *one* would by multiplication produce a result very nearly equal to two, renders it, even before this investigation, significant and intelligible, merely through this relation.

37. It is thus also that words denoting the *unknown causes* of known effects become intelligible; for instance, the word *force* which, as understood by most philosophers, denotes the unknown cause of motion.

Truth consists in the conformity of the received signification of words, with the *reality* signified and denoted by those words; but *relatively* to the speaker, the words are true when their signification is conformable only to the *appearance*, though not to the reality of the things they denote. They are also true when taken in the *received*, though different from the exact literal sense, as *your humble servant* at the bottom of a letter.

37.* Dr. Watts has well remarked, Logick, part I. chap. vi. sec. 3. p. 91, that “ when
 “ strong and rooted prejudice hath established
 “ some favourite word or phrase, and long
 “ used it to express some mistaken notion, or
 “ to unite some inconsistent ideas, then it is
 “ much easier to lead the world into truth,
 “ by indulging their fondness for a phrase,
 “ and applying new ideas and notions to their
 “ favourite phrase; and this is much safer
 “ also than to waken all their passions by re-
 “ jecting both their old words and phrases,
 “ and introducing all new at once: therefore,
 “ we say, *there is heat in the fire, coldness in*
 “ *ice, &c.*” So we say the sun rises and sets;
 and so Christ spoke of epilepsies, as if caused
 by demons; so the Cartesians talk of brutes,

as

as if they were capable of perception, though they held them incapable of any.

38. Words themselves are often the objects signified by other words. This happens, first, when it is necessary to express the *manner* in which things, or the *relations* of things, are denoted; and, secondly, when we consider the manner in which words form a language: a consideration which learners of a foreign language find absolutely necessary.

SECTION II.

WORDS CONSIDERED AS TO THE MODE OF SIGNIFYING THINGS OR THE RELATIONS OF THINGS.

Words thus considered, are either *positive* or *negative*.

39. *Positive*, as those which denote an object, independent of the absence of another object, as Being, substance, man, house, &c.

40. *Negative*, those which denote the absence

fence or denial of something positive or every thing: thus, *blindness* denotes the absence of sight; *quiet*, the absence of motion; *widowhood*, the state of a woman whose husband is dead; *ignorance*, *darkness*, *poverty*, *ideocy*, *nothing*, which last denotes the absence or negation of every thing.

41. *Absolute* are those which denote an object without any reference to the presence or absence of any other object, as man, metal, ox, John, George, &c.; they differ from *positive* inasmuch as these do not exclude a reference to other objects; thus *father* includes a reference to child, house a reference to habitation; whereas, absolute words do not denote any reference whatsoever.

42. *Relative* words are those that denote an object inasmuch as it is connected or related to another object, which is also called its *correlative*, or else the relation itself. Thus *father* denotes a man inasmuch as he is the cause of the existence of a *child*, which is therefore correlative to *father*: sometimes, however, this word merely refers to age. So *son* denotes a person inasmuch as descending from a father. So also the words *master* and *servant*,

servant, husband and wife, king and subject, creator and creature, are relative words denoting persons, inasmuch as they relate to, or are connected with each other, for all such persons have also proper names that are absolute.

43. In all these cases, the relative and correlative are concomitantly signified, for *father* cannot be understood without reference to a *child*, nor *king* without reference to subjects, &c. ; *antecedant* and *consequent*, superior and inferior, &c. ; other relative words denote the relation itself, as *paternity* the relation of a father to a child, *filiation* that of a child to its father, *sovereignty* and *subjection*, *dominion* and *servitude*, &c.

44. Other relatives, as *who, which, that, it, they*, &c. simply recall the objects and words which are to be connected, as mentioned in a discourse; hence the words they refer to are called *antecedents*.

45. *Referential* words (which the scholastics called connotative) are those whose direct signification is something absolute, but which also indirectly and obliquely denote a relation of this object to something else; thus
the

the direct signification of the word *book*, is a collection of leaves containing written or printed words, but it evidently, though indirectly, suggests the use for which it was intended, namely, *to be read*. So *house* denotes a structure, but it obliquely denotes, *designed for habitation*: so the words similitude, equality, contiguity, distance, causation, power, law, government, &c. *Supper* directly denotes a meal, but indirectly the time of that meal; and indeed most words, all *adjectives* and *comparatives*, have no correlative, and therefore, as Locke observes, their relation is less obvious.* The objects denoted by referential words, have no absolute names together with these as relative words have.

Concrete, Abstract.

46. *Concrete* words are those which denote a person or thing as possessing some absolute quality, property, or modification: thus *philosopher* denotes a person possessing wisdom;

* Lib. II. cap. xxv. sec. 2.

lawyer,

lawyer, a person possessing legal knowledge; so *physician*, *moralist*: *globe* denotes a body possessing roundness. These words *directly* denote the subject in which these qualities are found; and, indirectly or obliquely, the qualities themselves. All adjectives are deemed concrete, as they denote the person or thing to which they are applicable, though *indeterminately*, as *wise*, *good*, &c.

47. Abstract words are those which denote such parts, properties, modifications, actions, or attributes of an object, as cannot exist or be conceived separately, though they may be singly attended to and considered. The word *head*, or any other physical part, is not an abstract word, because it may exist separately from the *body* it belongs to; but the *length*, *breadth*, or depth of a body, are properties which cannot be separated from it, nor even be conceived separately from it, yet they may separately be attended to, and considered; for the *length* of a body may be measured without at all noticing its breadth or *depth*, as either of these may, without attending to the other two; nor whether the body be a *stone*, a *metal*, or a *field*, &c. or solid, or liquid. So
roundness

roundness denotes a peculiar modification of the shape of a body, which cannot exist separate, though the body may exist without the modification. So *motion* denotes merely a change of place, without any attention to the sort of body moved, nor whether the motion be quick or slow, upwards or downwards, eastwards or westwards, &c.; it is evident that such a change, divested of all these circumstances, can neither exist nor be conceived; yet it may be separately considered, and its laws assigned without attending to any of these circumstances. So *wisdom*, which denotes the knowledge and pursuit of the means of producing happiness, cannot, it is evident, exist separately from the being that possesses it: the same may be said of *power*, *justice*, *goodness*, *clemency*, *wickedness*, *cruelty*, and all other moral attributes, when considered separately from the beings to which they are attributable. *Human nature*, or *humanity*, *divinity*, *essence*, &c. are also abstract words: so *animality*, &c. because they denote the essential properties only of beings: so is *extension*, which denotes only one of the properties, to whose aggregate the term body is applicable. And hence

hence Locke well remarks, that extension is never said to move, though motion is constantly attributed to bodies. So *man* may be said to be a sociable animal; but it were improper to say that *human nature* is a sociable animal, man and body being concrete, and not abstract terms.

47^a. Abstract terms are frequently used as abbreviations, as when it is said the falsehood of such a proposition is apparent, that is, it is apparent that such a proposition is false.

47^b. Sometimes they are personified, as when we say *wisdom* leads to happiness, *folly* to destruction.

Univocal, Equivocal, Analogous.

48. *Univocal* are such words as have the same signification, when applied to different persons or things: thus *man* is equally applicable to all male adult individuals of the human species; so the word *being*, when applied to all that exist.

49. *Equivocal* are those words which have no common signification, though by an abuse of language

language they are applied to different things. Of this sort is the word *bull*, when applied to a celestial sign, to an animal, to a blunder, or to a papal constitution, things that have no sort of similitude or analogy to each other. So the word *parliament*, when applied to the parliaments of France and that of England; the former having only a judicial, the latter not a judicial but a legislative power. So the word *king*, when a mere surname, and when denoting the supreme dignity.

50. *Analogy* properly signifies the similitude which the *ratio* of two numbers is said to bear to the *ratio* of two other numbers, that is, a proportion.

51. But in other sciences two sorts of analogies or similitudes are distinguished, the *metaphorical* and the *proportional*. Many words, besides their direct and original signification, are employed, and as it were transferred, by reason of some *similitude*, to denote, in a secondary and derivative sense, things to which the primary and original signification of those words bears some similitude. Thus *foot* is applied to the lower part of a mountain, in a secondary or metaphorical sense, on account of the relation
of

of *inferiority* which that word denotes in its primary sense when applied to the lowest part of an animal. So the word *head*, which in its original meaning denotes that part of an animal which governs the whole, is also to the governing member of a community by reason of this similitude; and it is in this manner that human passions, and even the parts of the human body, are in Scripture often applied to God.

52. But those words which denote properties or attributes, that with equal propriety are ascribed to different beings, though possessed by them ever so differently as to *manner*, and ever so unequally as to *degree*, are called *proportionally analogous*. Thus the power of seeing is with equal propriety attributed to a near-sighted person, and to persons who see at the greatest distance, even should their power of seeing be equal to that obtained by using the most powerful telescope. So the locomotive power is ascribed with equal propriety to animals who move by two legs, or four legs, or without legs, by alternate involution and evolution, as worms and serpents, or by fins and wings, as fish and birds. Thus

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the

the words *knowledge*, *wisdom*, and *goodness*, are with equal truth attributable to *man* and to God, but with an infinite difference as to the manner and degree in which the attributes they denote are possessed, exist, or are exercised by both.

Singular, Common, Appellative, General.

53. *Singular* words are either the *proper* names of *persons* or animals, as Peter, John, Bucephalus, &c. ; or of cities, mountains, rivers, countries, planets, &c. as London, Paris, Alps, Danube, Spain, Mars, Moon, the Earth, &c. ; or any person or thing specially demonstrated by the words *this* or *that*, or any collective word specially denoted, as the *Roman people*, the *English army*, &c. God is also a singular name, as it is applicable only to one Being ; and indeed, in our and the Jewish theology, is a proper name.

Collective words are rendered *singular* by the word *whole*, as the *whole army*.

54. *General* words, otherwise called *common* or *appellative*, are names which are indiscriminately and indifferently applied to numerous objects whether natural or artificial, by reason

of

of some similar properties in all of them, as shewn No. 31, as *man, city, mountain, river, army, &c.*

55. These words, properly speaking, are not *abstract*, but rather *indeterminate*, for they denote no abstract property, but rather concretely; yet as they may be considered and spoken of, without reference to any particular person or thing to which they are applicable, they have by many been confounded with abstract terms.* Thus *populous cities* are said to be the nurseries of vice, without thinking either of London, Paris, or Rome, &c. particularly.

Simple, Complex, Collective, and Complicative.

56. Logicians commonly distinguish terms into *simple* and *complex*; by simple, they mean such as consist of one word only, as *God, man*; and by complex, such as consist of two, viz. of a substantive and adjective conjoined, as a *good man*: these are convertible and equivalent to propositions, as a *man who is good*, and *vice versa*. In some languages such words

* See 1 Locke, p. 120, 124. 2 Locke, 10, 217, 8vo.

often coalesce into one, as Παντοκράτης in Greek, which signifies the *Creator of all things*.

Collective substantives are those which denote a mere plurality, as *people, multitude*.

57. *Complicative* words are those which denote complex notions, and are abbreviations of phrases which would otherwise be necessary to express and develop them. Such are those, first, which involve in their signification both active and passive states of the mind connected with each other, of which some instances have been already adduced, No. 31, and which I shall explain more minutely: for instance, the word *desire* denotes, first, an object desired; secondly, the absence of that object; thirdly, an uneasiness (a disagreeable sentiment) caused by the absence of that object; fourthly, a tendency (nisus) to obtain that object. This is, the active state of the mind, as the former is the passive state.*. Similar complications may be found in evolving the signification of all other words denot-

* Mem. Berl. 1760, p. 341. Condillac, 1 Gram. 166, 12mo. edit.

ing the passions. See Cogan's excellent treatise thereon.

So *alms* denotes, first, the idea of a person in extreme want; secondly, the money or other relief granted to that person; thirdly, the sentiment of compassion, or of duty to God.

So the word *theft* denotes, as Mr. Locke remarks, first, the possession of any thing; secondly, the concealed change of possession of that thing; thirdly, the exclusion of the consent of the proprietor; fourthly, a sentiment of disapprobation of the possession thus gained. Among the Spartans, who allowed the surreptitious gaining of property, this sentiment of course could not exist; therefore this mode of obtaining property could not in their state be called theft.

58. Or, secondly, words that denote an action accompanied with particular circumstances, and the various sentiments, whether of approbation or condemnation, excited by that action, according to the nature of those circumstances: thus *homicide*, or the action of killing a man, is, according to the circumstances that induce it, either justifiable (but I

know no single word conveying this complex notion) or it is condemned; and then, according to well known circumstances, called *murder, manslaughter, parricide, &c.*

59. Or, thirdly, words that denote *suffering* for any particular cause, as *martyrdom*, suffering for maintaining religious truth; or *forbearance* for religious reasons, as *longanimity*.

60. Fourthly, words that denote a plurality of persons or actions, regularly connected with each other for particular purposes, as *army, navy, parliament, jury, government, triumph, &c.*

61. Fifthly, words that imply an assembly or plurality of persons, with the absence of any connecting order among them, as *mob, anarchy*.

61^b. Sixthly, words that denote relations, whether natural or factitious, as *father, king, governor, magistrate, a criminal, a traitor, a tyrant, &c.*

Universal, Particular, Exclusive.

62. *Universal* words are those which denote in a general manner, that is, without expressing the precise number, the whole quantity of persons or things they are applied to,

or

or the absence of any quantity : they are collective or distributive.

Collective as *all* frequently is, or *universally* *negative* as none.

Distributive as every, each, whosoever,* any.

63. *Particular*, so called for denoting greater or lesser parts of a whole greater number indeterminately, as some, most, many, several, few ; *not all*, which is equivalent to *some* or *many*, so *not a few* ; *not many* is equivalent to a few, and few denotes *some*, though not many.

64. Singularly *exclusive*, as alone.

Specific, Generic.

65. *Specific* words are those that denote those essential properties of individuals in which they all agree with, or are similar to each other ; thus all *men* resemble each other in the essential properties of animal life, and the faculty of reasoning. The aggregate of such properties is called a *species*, and each of these properties is called *specific* ; thus *gold* denotes the aggregate of the properties of

* Condillac, 2 Gram. 16.

fusibility, superior gravity, superior malleability and ductility, *yellow colour*, insolubility in nitric acid, &c. solubility in the nitro-muriatic, and various other peculiar properties that may be possessed by the aggregate of those already known, and therefore called a *species* of the metallic genus, and those properties singly are called *specific*.

66. *Generic* words are those which indicate the similar essential properties of different species: thus there are various sorts or species of animals, as birds, beasts, fishes, &c.; and these agree in this, that the individuals of each of these species, to support life, must (if not in a dormant state) take in nourishment at greater or lesser intervals of time, are (at least to appearance) capable of perception and of spontaneous motion. The word *animal* then denotes the aggregate of these properties, and is called, when considered relatively to the various species of animals, a *genus*. Thus genera and species are abridged expressions of the collected properties they denote, considered independently of the particular individuals that possess those properties: the generic appertain to a greater number of individuals than

than the specific, for they appertain to individuals of different species; whereas, the specific relate only to individuals of one species. Thus *metal* is a genus which comprehends fusibility as a generic property common, and in some respects similar, in all metals; but the property of being fusible at four hundred and twenty degrees of heat is found only in lead; this therefore is a specific property: each species of metal has a degree of fusibility peculiar to itself, and the same may be said of each of the other specific properties. So *body* is a more *general* word than *animal*, for it denotes the aggregate of those properties in which animals, vegetables, minerals, water, air and light agree, and consequently is applicable to a greater number of individuals.

67. In every general, generic, or appellative name, its signification, or what is called its *comprehension*, No. 17, must be distinguished from its extension; that is, the persons or things to which these general names are applied. Thus what is comprehended or denoted by the name *animal*, is applicable to the different species of animals; but when it is applied to one species of animals only, then
its

its signification is limited to that single species. Thus when it is said *a horse is an animal*, the meaning is, that animal properties are part of those denoted by the word *horse*.

Determinate, Indeterminate.

68. *Determinate* are those which determine with precision the persons or things denoted ; as, first, the proper names of persons or things, as John, Henry, &c. London, Paris, &c. ; secondly, names applicable only to one person, whether natural or constituted, as the king or parliament, the *nobility*, the commons ; or one regulation, or institution, or assembly, as the government, the monarchy, the law, &c. ; thirdly, the words that express collective or distributive quantity, as *all*, *each*, *every*, *none*, or *exclusive*, as *alone*, *first*, *last*.

69. *Indeterminate*, all appellative, general or generic, names are so ; also the words *any*, *some*, *many*, *several*.

Exclusive.

Exclusive words, as *alone*, *first*, *last*, *beginning*, *end*, denote both a positive and a negative ; thus *alone* denotes a person or thing existing unaccompanied ;

unaccompanied; *first*, an existing thing with an exclusion of priority; *last*, an exclusion of any subsequence; *beginning*, the first moment of existence; *end*, the last moment of existence, or the negation of continuance.

SECTION III.

OF WORDS CONSIDERED AS RELATIVE TO EACH OTHER.

70. To speak of any thing we must give it a name, and this name is what in contradistinction to other words is called a *noun*.

71. *Names* that denote objects which either are the subjects, or at least are capable of being referred to as the subjects, of some quality or modification, are called *substantive* nouns or names.

72. *Names* or nouns that denote any quantity, quality, modification, state, or relation, without any reference to a particular subject, but, by their particular grammatical construction, denoting a capacity of being referred to a subject, are called *adjectives*.

73. *Pronouns* are words used in the place or instead of the proper and common names
of

of persons or things ; they are either *personal*, *demonstrative*, or *relative*.

Personal denotes the person that speaks, as *I*, and is used in the place or instead of his proper name, or *we* if many speak, or *one* for many.

—— or the person or persons spoken to, as *thou*, *ye*.

—— or the persons or things spoken of, as *he*, *they*, when they are present ; for if absent, they should first be denoted by their proper names or some other characteristic, and then the pronouns *they* or *that* become *relative*.

Demonstrative as *this*, or *these*, or *those*, denoting some persons or things present ; for if absent, or before mentioned, or any way denoted, these words become *relative*.

Relative, viz. referring to some antecedent, as *who*, *which*, *what*, *that*.

74. A *verb* is a word denoting some state of the mind of a person concerning himself, or any object to exist, or to have existed, or to exist in a future period, as *I love*, *I grieve*, *I admire*, *I see it*, *I hate him*, &c. or stating the existence or non-existence, whether past, present,

ent, or future of an object, as when it is said *God, exists*, the *soul exists*, &c. ; or stating an action, or a particular relation betwixt two or more objects, to exist either actually or at some future period ; or not to exist, and consequently the applicability or inapplicability of the words denoting those objects to each other : hence in every case a verb denotes not existence as a noun, but *to exist*, either singly or with some additional modification, or by prefixing a negative, it denies such existence.

75. Most verbs, besides denoting some person or thing to exist, are so formed as to express some action or attribute of the person or thing whose existence is mentioned, as *I write*, that is, I am writing, *I read*, I am reading, &c.

76. *Prepositions* are words that denote the various relations of persons or things, as *at*, *to*, *from*, *through*, a place ; or *whence*, *thence*, *wherefrom*, &c. ; or the order of time, as *before*, *after* ; *together*, or of union or separation, as *with*, *without* ; or opposition, as *against* ; or the efficient cause, as *by*, *through*.

77. An *adverb* is an abridged expression of a noun or nouns and a preposition, as *wisely*,
that

that is, *with wisdom* ; *soon*, that is, in a short time ; *less*, that is, in a smaller quantity ; *often*, that is, at several times ; *where*, that is, in which place ; *when*, that is, at the time ; *then*, at that time, &c. *never*, that is, *not at any time* ; *nowhere*, that is, *not at any place* ; *necessarily*, that is, *with no possibility of being otherwise*.

78. A *conjunction* is a word that connects, separates, or discriminates the different parts of a proposition, or the different propositions of which a discourse is composed ; *that is*, often a conjunction, and then it denotes *this thing, which is*, &c.

SECTION IV.

OF WORDS, RELATIVE TO PROPOSITIONS.

79. We have already seen, No. 3, what a proposition is. The words that form it are called the *subject*, the *predicate* or *attribute*, and the *copula* or *connective* ; the two first are called *terms*, because, in the most simple and natural order of things, they are the extremes of a proposition.

80. The *subject* of a proposition is that of which something is affirmed, or denied, or doubted ;

doubted; the *predicate*, or *attribute*, is that word or phrase whose signification is affirmed or denied of the subject, or announced to be doubted of: thus in the proposition *God is good*, *God* is the subject to which goodness is attributed, and *is* the copula which connects both terms. In negative propositions, the negative sign *not* is added to the copula, otherwise the subject and attribute would not be disjoined, as *God cannot be deceived*, that is, *God is not a Being capable of being deceived*; and it must be so understood, even when apparently remote from the copula, as Mr. Dralloe has well observed, unless it expressly affects the universality of the affirmation, as in No. 63. Thus *no man is perfect*, is equivalent to *a perfect man does not exist*, or *is not existing*; *not a day should pass in idleness*, that is, *a single day should not pass in idleness*, or *that a single day should pass in idleness is not proper*; and hence in an action of detainue, if I plead *that I do not detain your property*, the detain^{er} only is denied, but not the property to be yours.

81. One proposition is often the subject or the attribute of another proposition; thus *that God cannot deceive us*, is a truth which cannot
be

be denied. What precedes the copula *is*, is the *subject*, and what follows is the *predicate*. *To believe as a Christian, and live as a Pagan, is an inconceivable absurdity*; here the union of the *belief* of a Christian, and the *life* of a Pagan is the subject.

81.* But a word to which a proposition is annexed is not an attribute; thus in the proposition *the Sun is in the firmament*, in the firmament is not the predicate, but *is existing*, &c.

82.* Propositions that contain but one subject and one predicate, are called *simple* propositions; if more, they are called compound or complex, or they may happen to be both compound and complex.*

* *Sentence* denotes an entire period, and consequently a proposition with all its adjuncts: a *phrase* denotes a dependant proposition as part of a sentence; it also often denotes a mode of expression peculiar to a particular language.

CHAPTER III.

CHAPTER III.

OF THE PROPERTIES OF PROPOSITIONS.

83. The properties of propositions are either absolute or relative.

Of the absolute properties of Propositions.

84. The absolute properties of propositions are five; namely, either affirmation or negation, or a participation of both, and truth or falsehood; these are called the *qualities* of a proposition, but the two last are called *secondary* qualities.

What is meant by affirmation or negation is sufficiently understood, the participation of both requires to be explained.

85. A *participative* or *amphitetic* proposition is either an affirmative including a negative, as *he alone perpetrated the fact*, that is, he perpetrated the fact and no other; or it is a negative including an affirmative, which lawyers call a *negative pregnant*, as where a

E

defendant

defendant denies having committed the fact in the *manner and form* in which he is charged with having done it, which implies that he has done it some way.

85.* If the subject of a proposition is negative and the predicate also, the proposition is affirmative, as *misfortune is not always useless*, is equivalent to *misfortune is sometimes useful*, for in English two negatives make an affirmative.

SECTION I.

OF THE QUANTITY OF PROPOSITIONS.

86. The extent to which the affirmation or denial expressed in a proposition reaches, is called the *quantity* of the proposition.

87. The *quantity* of a proposition is manifested by the *quantitative* expressions applied to its subject, enumerated No. 53, 62, 63, 64; and hence propositions are denominated either *universal*, *singular*, *particular*, or *indefinite*.

88. An *universal* proposition is that in which the subject is expressly affirmed or denied

nied in its whole *extent*, as well as in its comprehension, as *all animals are mortal, no man is perfect*; the existence of a perfect man is denied. The denial may, however, be applied to the universality only, as *all men are not just*.

89. In universal propositions two things are to be considered; first, whether they should be understood *literally* and *strictly*, or *loosely*; for, in a popular manner of speaking or writing, a rigorous exactness is not always found.

90. And, secondly, whether they should be understood of the whole extent of the subject taken *collectively*, or only distributively, that is, of *each* part of which the collection or aggregate consists.

To determine these points, the nature of the *predicate* must be attended to.

91. And, first, if the connexion of the predicate with the subject be mathematically or metaphysically necessary, or if the predicate be necessarily incompatible in the same manner with the subject, then the universality of the affirmation or denial must be understood in the *strictest* sense. Thus, when it is said that all *circles are round*, or that all

circles are to each other as the squares of their diameters, or that all causes precede their effects, or that no triangle is equal to three right angles, or that no man is omniscient, no number infinite, these universal propositions are true in the strictest sense.

92. But if the agreement or disagreement of the predicate and subject be only *physically* necessary, that is, according to the established course of nature, as *all men are mortal, no man can walk on water*, their universality is to be taken less strictly, for the effects of supernatural power must be excepted.

93. Lastly, the universality is to be taken *loosely* when the proposition is *most commonly* true, but yet is subject to many exceptions, as when it is said that *all women are talkative*, or *no battle is lost but by the imprudence of the general*, &c.

94. As to the second point we must remark, first, a universal negative proposition must be understood *distributively*, because the negative destroys any agreement betwixt the subject and predicate, unless the subject be a collective substantive word: thus, *no man can vanquish an army*, is true only distributively,
for

for the meaning is, no *single man*; and it cannot be understood collectively, as a collection and singularity are repugnant.

No man is perfect, or no man can swim one hundred leagues; these propositions must be understood only distributively, though it is equally true that *no collection of men is perfect*, nor can any collection of men swim one hundred leagues, for these are different propositions from the former.

95. Remark also, that in our language if the predicate also be negative, the proposition is affirmative: thus *no man is immortal*, is equivalent to *all men are mortal*, and must be taken as affirmative propositions are to be taken.

96. With respect to universal affirmative propositions, we must observe whether they are rendered universal by the collective word *all*, or by distributive words; if by the word *all*, then the following distinctions occur.

97. First, if the predicate of the proposition results from, or supposes a collection, then the proposition must be taken *collectively* and not distributively: thus, *all the members formed a committee*, must be understood collectively, for it is the collection of the members,

or all the members taken together, that formed the *committee*, and evidently each member could not be a committee, though *all* were.

98. Secondly, if the predicate receives any alteration when the proposition is taken in the *collective* sense, in the properties it has in the *distributive* sense, it may be taken in either of the two senses ; but then it may be true in one of these senses, and false in the other, or it may be abstractedly true with more or less probability of its falsehood, or more or less facility in given circumstances. Thus the assertion that *all the arrows in a quiver are easily frangible*, is true in the distributive sense, but false in the collective ; if it were that *all the arrows in a quiver are difficultly frangible*, it would be true in the collective sense, and false in the distributive ; if it were simply that *all the arrows in a quiver were frangible*, this is certainly true, even in the collective sense, but with considerable difficulty.

99. Thirdly, if the predicate is *no way altered* by a collection, then whether its connexion with the subject be essential, necessary, or contingent, the proposition may be taken either collectively or distributively, as *all men*
are

are mortal; all Europe mourned the death of Lewis XVI; all creatures had a beginning.

100. Again, if an affirmative proposition be rendered universal by the distributive words *every* or *each*, it cannot be understood in a collective sense, nor consequently allow of the substitution of the word *all* for *every* or *each*, for these words are essentially distributive and allow no other construction.

101. But if the predicate of such a proposition is *no way altered* by a collection, then a collective sense, though not expressed by it, is evidently deducible from it. Thus since *every man is mortal*, it evidently follows that *all men are mortal*; if *every sheep in a field is white*, it is plain that all the sheep are white; if *every creature has had a beginning*, it is plain that all creatures have had a beginning.

102. But if the predicate receives *any alteration* by a collection, then the collective sense (though possibly also true or approximating to truth,) cannot, strictly speaking, be inferred from the distributive proposition: thus, *though every arrow in a quiver is frangible*, it does not follow that *all of them collectively taken are frangible*. So though it is

certain that *every judge is fallible*, it cannot be inferred that the *twelve judges collectively* are equally, that is, in the same degree *fallible*, for their opinion approaches more nearly to the true opinion, at least the contrary happens very rarely.

103. The *predicate* of an affirmative proposition, even though the proposition be universal, is always taken particularly; for though abstractedly considered, it is *often* more extensive than the subject of the proposition, and applicable to various other subjects; yet when connected with the subject of a proposition, its signification is limited to that subject. Thus, when it is said that *every man is an animal*, though the word *animal*, abstractedly considered, is applicable to many other species besides the human, as birds, beasts, &c. yet in this proposition it is limited to the human species and denotes no other; and hence is said to be particular, denoting only a *part* of those objects to which it were otherwise applicable.

104. But in negative universal propositions, the predicate is always taken *generally*, that is, in its whole extent. Thus, when it is said that

that *no stone is metal*, the meaning is, that it is not a metal of any kind.

105. Yet all the properties of the predicate are not denied, but merely the *specific* and *peculiar* properties; for instance, hardness and fusibility are properties of metals, which are not denied to be possessed by stones.

Dr. Campbell, in his *Philosophy of Rhetoric*, Vol. II. p. 386, has well marked:

When the discourse is of	two; when it is of <i>several</i> .
Collectively	Both - All.
Distributively	Each - Every.
Indiscriminately	Either - Any.
Exclusively	Neither - None.
Relatively and Interrogatively	Whether - Which.

106. A *singular* proposition is that whose subject is considered as a single object; as, first, the proper names of persons, John, Paul, &c.; or of things, as London, Paris, aqua regia, &c.; or the sun, the moon, the earth, the planet *Mars*, &c.; the city of Paris, the kingdom of England, &c.

Or, secondly, words to which the demonstrative pronouns *this* or *that* are affixed, as *this* or *that* man, or the personal pronouns *I*, *thou*, *he*; or, thirdly, a collective word in the singular number, as the *army*, the *garrison*, &c.;

&c.; even when it is said *the garrison was* numerous, for such aggregates are considered as units; or, fourthly, a person or thing particularly denoted morally ~~one~~ or evidently single, as *the man who first ascended in a balloon* must have been very intrepid; *the deluge*, *the ark*, &c.

107. An evident mark of a singular proposition is, that it cannot be converted into an universal proposition: hence the proposition, *a truly great man is he who is master of himself*, is not a singular but an universal, for it is equivalent to *every truly great man is master of himself*; but *the Romans conquered the Gauls* is a singular proposition, for *the Romans* are considered as *one body*, and we cannot convert this proposition into an universal, *all the Romans* or *every Roman*, nor into a particular, *as some Romans*, &c.

108. A particular proposition is that in which the subject is expressly taken only in part of its extent, by reason of the particularising words *some*, *many*, *several*, *most*, *almost*, *all*, or *few*, *scarce any*, as *some men are wise*, *most men are ignorant*, &c.

109. An indefinite proposition is that in which

which the extent of the subject is not determined either by the signs of universality, nor of particularity, but merely by the nature of its connexion with the predicate ; if the connexion be essential, or necessary, or constant, it is plain the subject is taken *universally*, as no part of its extent can be destitute of that which essentially, necessarily, or constantly accompanies it ; but if the connexion be contingent, then a part of the subject may be connected with the predicate and a part not, and consequently the subject is taken partially or *particularly* : so also if the subject be necessarily considered as *an u it*, the indefinite proposition must be considered as *singular*.

110. Thus in the proposition *men are mortal*, it is plain the subject *men*, and the predicate *mortal*, are necessarily connected ; the subject then is taken in its whole extent, and consequently the proposition is equivalent to the universal proposition *all men are mortal*. So *mankind is subject to many evils*, is equivalent to *all men are subject to many evils*, though *mankind* and *all men* are synonymous. So *a ship that sails round the world is exposed to many dangers*, is to be taken *universally*, and is equivalent

valent to every ship, &c. for exposure to dangers necessarily attend such a voyage. *The murderers of Caesar were ungrateful*, equivalent to an universal *all the murderers of Caesar*, &c. for ingratitude necessarily accompanied their crime.

Merchants are subject to bankruptcy, equivalent to an universal proposition, for liability to failure necessarily attends hazardous undertakings.

A truly great man is master of himself, equivalent to every great man, &c.

The inhabitants of London, &c. may die on one day, equivalent to all the inhabitants, &c. which though in the highest degree improbable, even though an earthquake should happen, yet is absolutely true.

III. *Merchants are industrious*, equivalent to a particular proposition, for the connexion is not necessary though common and usual, therefore it is equivalent to *most* or *many merchants*, &c.

The inhabitants of great cities are uncommonly wicked, to be taken particularly, being equivalent to *very many inhabitants*, &c. Commonly here signifies *for the most part*, and not frequently,

frequently, for otherwise the sense would be that all the inhabitants of great cities were frequently wicked.

The Italians excel in painting and music, to be taken particularly for many Italians; but *the Romans conquered the Gauls* is a singular proposition, because the Romans here are considered as one body.

There are wicked men in all countries, equivalent to *some or many*; men in all countries are wicked.

Few men escaped the yellow fever, &c.; this is a particular proposition, as *few* expressly denotes a part and is not an indefinite proposition.

The proposition John xix. *the soldiers platted a crown of thorns and put it on his head*; these actions were contingent, and therefore, as it is probable there were many soldiers, it may be supposed that only a few of them were employed in platting and imposing this crown.

The injured are not apt to forgive, that is, ~~few~~ or not many injured forgive.

Wisdom leads to happiness, folly to misery.

III.* In negative propositions; either the

con-

connexion of the subject and predicate is denied, as *no man will be saved*, or the universality only of the proposition is denied, as *not all men will be saved*, or *all men will not be saved*, or *every man will not be saved*. So Matthew, vii. 21, not every one that saith to me Lord, Lord, shall enter into the kingdom of heaven; but some are not excluded, but rather implied.

SECTION II.

OF THE PROPERTIES OF PROPOSITIONS RELATIVELY TO EACH OTHER : THESE ARE, OPPOSITION, INCOMPATIBILITY, DISPARITY, CONVERSION, AND EQUIVALENCE.

Of Opposition, Incompatibility, Disparity.

112. The opposition of propositions properly consists in this, that the one directly denies in whole, or in part, what the other affirms, the subject and predicate remaining the same, except one of them is a singular proposition: hence disagreement in *quality*,
that

that is, in affirmation and denial, is essential to opposition properly so called.

113. Four sorts of opposition are commonly distinguished; the *contradictory*, when the propositions are opposite to each other both in quantity and quality; the *contrary*, when both are universal; the *sub-contrary*, when both are particular; the *subaltern*, which I should rather call *subordinate*, when both agree in quality and disagree only in quantity; however, properly speaking, these are not opposite but merely unequal. These definitions are also imperfect, or erroneous, as shall presently be shewn.

114. With respect to *quantity*, the opposition of propositions is susceptible of ten different combinations; for both may be *universal* or both *particular*, or both *singular*, or both *indefinite*.

Or one *universal* and the other *particular*; or one *universal* and the other *singular*; or one *universal* and the other *indefinite*.

Or one may be *particular* and the other *singular*; or one *particular* and the other *indefinite*.

Or one may be *singular* and the other *indefinite*.

First

Second Case. Both particular.

123. First, some wars are just, most wars are not just, or unjust.

Second, some men are mortal, some men are not mortal.

Third, some men are omniscient, some men are not omniscient.

124. When the connexion of the subject and predicate is necessary or constant, the affirmative must be true, and the negative false, as in the second example.

125. When the connexion is contingent, as in the first example, both are true.

126. So if the disconnexion be essential, necessary, or constant, the negative is true, as in the third example, and the affirmative false.

127. In the proposition *few men are omniscient*, I think the negation affects only the quantity of the proposition and not the copula; and consequently the proposition is not negative, but merely in appearance: hence the propositions *some wars are just*, *few wars are just*, do not oppose each other, for the last is tantamount to *not many wars are just*.

128. The

128. The opposition of particular propositions to each other is called *sub-contrary*; their distinctive character is, that both may be true, and then they are not opposite; or one may be true, and the other false, but both cannot be false: for if both were false, then the universal proposition that comprises one of them would be false, and if so, the other must be true, otherwise contradictory propositions would be false. Thus *some men are white*, *some men are not white*, cannot both be false, otherwise the propositions, for instance *all men are white*, and *some are not white*, would both be false.

Third Case. Both singular.

129. If both refer to the same thing, or to the same person (whether natural, politic, or fictitious,) in the same circumstances of time and place, and in the same respect, then one must be true and the other false, as *Alexander conquered Persia*, *Alexander did not conquer Persia*; *the moon governs the seasons*, *the moon does not govern the seasons*; *the whole army was infected with the plague*, &c.

130. But if they relate to different cir-

circumstances of time or place, both may be true.

Thus *Hannibal defeated the Romans, Hannibal did not defeat the Romans*, for he was defeated at Zama.

131. Propositions opposed to each other, as in No. 129, are called *contradictory*; their distinguishing character is, that both cannot be true nor both false, but one must be true and the other false.

Fourth Case. Both indefinite:

132. *First, men are mortal, men are not mortal.*

Second, merchants are industrious, merchants are not industrious.

Third, the injured are not apt to forgive, the injured are apt to forgive.

Fourth, the cruel are not beloved, the cruel are beloved.

Fifth, men are not omniscient, men are omniscient.

133 If the connexion of the subject with the predicate is necessary, the affirmative must be true and the negative false, as in the first example.

134. If

134. If the connexion be not necessary, but usual and common, then the indefinite propositions must be considered as particular, with the addition of *most* or *many*; and the affirmative is true, and the negative false, as *most merchants are industrious, most merchants are not industrious*.

135. If the disconnexion is necessary, as in the fifth example, then the negative must be true, and the affirmative false, as in the fifth example. If the disconnexion is not without exception, yet most usual and common, then the indefinite propositions must be considered as particular; with the addition of *most* or *many*, then the negative is true, and the affirmative false: thus in the third example, *most injured persons are disinclined to forgive* (that is, not inclined,) is true, *most injured persons are apt to forgive* is false. If these indefinite propositions were resolved into universal ones, as *no injured man is apt to forgive, all injured men are apt to forgive*, then they would be contrary and both false.

136. But it is a general rule in construction, to falsify as little of the text as possible, *Maledicta expositio quæ corrumpit textum*.

Fifth Case. One universal and one particular.

137. *First, all men are mortal, some men are not mortal.*

Second, no man is omniscient, some men are omniscient.

Third, all battles have been attended with bloodshed, some battles have not been attended with bloodshed.

Fourth, one battle has not been attended with bloodshed.

Fifth, all merchants are industrious, some merchants are not industrious.

Sixth, no man is wise, some man is wise, or one man is wise.

Seventh, all beings are eternal.

Eighth, no being is eternal, some beings are eternal.

138. When an universal proposition is opposed by a particular proposition, the opposition has generally been deemed *contradictory*. But as it is a maxim universally allowed, that two contradictory propositions cannot in any case be both true, or both false, but that one is *necessarily* true, and the other *necessarily* false; and since, nevertheless, cases happen in which

which it is possible that both the universal and the particular proposition may be false, it is plain that the definition is inaccurate, and that a distinction must be taken.

139. Firstly. If the *connexion* of the predicate with the subject be *necessary*, as in the first example, then the universal affirmative *must* be true, and the particular negative false: these then are contradictory.

140. So if the *disconnexion* is necessary, the universal negative *must* be true, as in the second example, and the particular affirmative false.

141. Secondly. If the connexion of the predicate with the subject be *contingent*, as in the third example, both propositions may be false; the universal affirmative if there be *one* exception, and the particular negative if there be *but one* exception; for *some*, joined to a plural substantive, denotes at least *two*; and of a battle of the kind mentioned in the fourth example, we have one instance in Italy. But the word *some* joined to a substantive in the singular number, as in the sixth example, denotes only *one* person or thing. In the seventh example, the first proposition is false, the

second true: in the eighth example both are false; if the second proposition had been *one being is eternal*, then the propositions would be contradictory; but as it is stated, the second affirms more than is necessary to falsify the first.

142. So if the *disconnexion* be contingent, both may, by possibility, be false, though in general one is true and the other false, as in the fifth example; for there the universal affirmative is certainly false, and the particular negative is not necessarily true, for if *but one* merchant were industrious, it would be false, for *some* implies at least more than *one*.

143. Hence the true definition of contradictory propositions is, that one exactly denies the same identical point that the other affirms, and nothing more or less than is sufficient to falsify the affirmative; or conversely, if the affirmative asserts no more or less than is required to falsify the negative; and the reason is, that the distinctive character of contradictory propositions consists in this, that one *must* be true and the other false, upon this ground, that it is *impossible to be and not to be*. Now this ground would not apply if any thing
more

more were denied by one proposition than is affirmed by the other, or affirmed by the one than is denied by the other ; as in such case, the excess would be superfluous, not being contradicted.

144. Thus the propositions *all men are wise, some men are not wise*, are not contradictory, for the second denies more than is necessary to falsify the first, as the existence of one single *unwise* man would be sufficient to falsify it. So the propositions *all men are wise, no man is wise*, are not contradictory, though the second exactly denies what the first affirms, because it does so, and also more than is necessary to falsify it ; therefore both may be, and in this case really are, false ; the truth of both is impossible.

Sixth Case. One universal and one singular.

145. *First, no General has been always successful, Marlborough was always successful.*

Second, all governments are imperfect, one government is not imperfect ; these propositions are evidently contradictory, therefore one must be true, and the other false.

Third,

Third, all beings are eternal, one being is not eternal; the first false, the second true.

Seventh Case. One universal and the other indefinite.

146. First, men should avoid all dangers, no man should avoid all dangers.

Second, states have been ruined by intestine commotions, no state has been ruined by intestine commotions.

147. *Men* being taken generally and absolutely in the first example, without any reference to age, rank, or profession, must be understood universally; and in that sense the affirmative is false, for the dangers resulting from resistance to enemies should not always be avoided, nor even *probable* dangers, as those of navigation, &c. in common life. The negative is also false for some men, as the old, the infirm, the unarmed, &c. should avoid all dangers; the propositions are then *contrary*, and both false.

148. In the second example, the affirmative is to be taken *particularly*, and is true; for the states of Greece, which in fact formed one federal body, were ruined by their intestine

testine broils, and so were those of Holland lately; but England was not ruined in consequence of the grand rebellion, nor France by the wars of the League; nor lately, by the revolts of the Vendéans, Lyons, Marseilles, &c.; the negative is false, and the proposition *contrary*, as more is denied than was affirmed.

149. Hence if an indefinite proposition is reducible to an *universal*, this case will coincide with the first, and should be considered accordingly.

If reducible to a *particular*, it will agree with the fifth case.

If reducible to a *singular*, it will agree with the sixth case.

Eighth Case. One particular and one singular.

150. *First, some Romans were virtuous, Clo-dius was not virtuous.*

151. These propositions are never opposite to each other; for as the particular affirms or denies only a part of the subject, the singular must relate to another part, or be comprehended in the other, and both may be true.

Ninth

Ninth Case. One particular and the other indefinite.

152. *First, states have been ruined by civil wars, some states have not been ruined by civil wars.*

Second, the industrious are successful, some industrious men are not successful.

153. The indefinite proposition is either reducible to an *universal*, and then the opposition coincides with that in the fifth case; or it is reducible to a *particular*, as in both the examples, and then it coincides with the second case: in the first example, add *many states*, &c.; and in the second example, add *most industrious*, &c.

Tenth Case. One singular and the other indefinite.

154. If the indefinite be reducible to an *universal*, it coincides with the sixth case.

If it be reducible to a *singular*, it will agree with the third case.

If reducible to a *particular*, it will coincide with the eighth case; and in fact there is no opposition.

Of

Of Subaltern opposition.

155. This is improperly called an opposition, for both propositions are affirmative, or both are negative, they differ only in quantity: thus,

First, all men are liable to mistakes, some men are liable to mistakes.

Second, all men are wise, some men are wise, or Socrates was wise.

Third, no man is omniscient, some men are not omniscient.

Fourth, no war is just, some wars (or many, or most,) are unjust.

On this species of opposition we may remark;

156. First, if the universal proposition be true, the subordinate, whether particular or singular, must be true also, as in the first and second examples; for an universal truth is only an abridged expression of every particular truth, and therefore is said to contain them.

157. But if the universal proposition be false, it cannot be inferred that the subordinate is false; for a false universal proposition does not include, but rather falsely excludes
all

all other subordinate propositions; these therefore are independent of it, and may be true, as in the second and fourth examples.

158. Second, if the connexion or disconnexion of the subject and predicate be essential, necessary, or constant, then the universal affirmative in the one case, and the universal negative in the other, are true, as in the first and third examples.

159. But if the connexion or disconnexion be contingent, then the universal, whether affirmative or negative, is false, as in the second and fourth examples.

160. *Note*, if in any case the nature of the connexion between the subject and predicate of either proposition be doubtful, the opposition must also be doubtful.

In general we may remark, that from the *truth of an universal proposition*, we may infer the truth of every particular proposition comprised in the universal; but from the *falsehood of an universal proposition*, we cannot infer the falsehood of its subordinate particular proposition.

Again, from the truth of a particular proposition, we cannot infer the truth of an universal;

verfal; but from the falſhood of a particular propoſition, we may infer the falſhood of the univerfal: thus if it be falſe that *ſome men are capable of committing every crime*, it is falſe that *all men are capable of committing every crime*.

Of Incompatibility.

161. Propoſitions are incompatible with each other when the ſubject of each propoſition being the ſame, either expreſſly, implicitly, or equivalently, the predicate of the one is inconfiſtent with that of the other; and conſequently both cannot be true, but both may be falſe, or one true and the other falſe; as,

Fiſt, all men are white, all men are black.

Second, all things have had a beginning, the world is eternal.

Third, laſt ſummer was warm (that is, at an average heated to 65° , or above, of Fahrenheit;) laſt ſummer was cold (that is, at an average below 65° Fahrenheit.)

Five thouſand men remained in the city, three thouſand men only remained in the city.

Fiſth, all bodies move, all bodies are at reſt.

162. Incompatibility, properly so called, is always reducible to opposition, either of contrariety or of contradiction, and to be reasoned upon in the same manner.

163. To form this reduction, the subject of each proposition, if apparently different, as in the fourth example, must be shewn to be the same. And the predicates, if vague, must be reduced to a precise determinate sense, as in the third example, otherwise one could not oppose the other, not being *ad idem*.

164. If the connexion of one or other of the predicates *disjunctively*, with the subject of the proposition, be essential, necessary, or constant, as in the fifth example, then the opposition is that of *contrariety*; and both may be false, as in that example, for some bodies may move, and some be at rest.

165. If the connexion of *only one of the predicates* with the subject is essential, necessary, or constant, as in the second example, then the opposition is that of contradiction, and consequently one of the propositions must be true and the other false: eternal is tantamount to *no beginning*. But if it be deemed
to

to denote also no end, the opposition will be that of contrariety; but the result will be the same, for one of the propositions is true and the other false. Some, it is true, have asserted that the world could have been created from all eternity; if so, some things might have been eternal and some not: but the falsehood of this opinion shall elsewhere be demonstrated.

166. If the connexion of the predicates with the subject be contingent, as in the first, third, and fourth examples, then the opposition is that of contrariety, and both propositions may be false, as in the first example, or one may be true and the other false, as in the third and fourth examples; or in the fourth example both may be false, for perhaps four thousand men remained in the city, or perhaps none at all remained in it.

In the second example the subject, though not apparently, yet is in reality the same, the *world* being comprised in *all things*.

In the fourth example, to evince the identity of the subjects, both propositions must be altered into others equivalent to them: thus *the number that remained in the city was five*

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thousand,

thousand, the number that remained in the city was only three thousand. If the word only were omitted, the propositions would not be incompatible, but merely different.

167. The next rule I shall lay down in the words of Mr. Marsh, from whom it is taken:

“ If a position, of which the truth is admitted, is urged against another position, the truth of which is the subject of inquiry, the former cannot be admitted as a necessary contradiction, and therefore a confutation of the latter, unless the two positions are wholly *irreconcilable*. To prevent therefore the former from being considered as a confutation of the latter, it is not necessary to prove that the two positions *must* have the same meaning, especially if one of them is expressed with ambiguity and admits of various explanations.”*

Of Disparity.

168. Disparate propositions are those whose *subjects* are different and irrelative, and hence the truth or falsehood of the one, is uncon-

* See Marsh's defence of the illustration of his hypothesis on the origin of the Gospels, p. 30, in the note.

nected with and independent of that of the other.

Equivalency.

169. Propositions are said to be equivalent to each other, when both, though expressed in different words, convey the same meaning.

SECTION III.

OF THE MODE OF CONTRADICTION OF SIMPLE PROPOSITIONS.

170. In many controversies, much wrangling often arises from doubts whether one assertion is contradictory or contrary to another, or whether one is consistent with the other. What amounts to a contradiction to an *universal* proposition is sufficiently clear; but with respect to particular and indefinite propositions, the following observations may be useful.

Particular.

171. If the particular proposition be in the

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singular

singular number, it must be contradicted by an universal, as in No. 141.

172. But if the particular proposition be in the *plural number*, we must consider the nature of the connexion or disconnexion of the subject and predicate.

173. For if the *connexion* or *disconnexion* be contingent, as *some wars are just*, then to form a contradiction, we must add the words *except one*, or words to that amount, as *not more than one war is just*; for *some* implies at least *two*, and consequently cannot be contradicted but by excluding any plurality. If you say *no war is just*, or *not one war is just*, you deny it is true the first proposition; but then you deny more than was affirmed by that proposition, and therefore your negative is not precise. If the particular proposition be negative, as *many wars are unjust*, to contradict it you must say *all wars but one are just*: it is, however, of little consequence in this case, to know whether the propositions are contradictory or contrary, for even if barely contrary, one of them is true and the other false.

174. If the connexion or disconnexion of the subject with the predicate be essential, necessary,

cessary, or constant, then no addition need be made to the universal proposition, as *some men are mortal, no man is mortal.*

Indefinite.

175. To contradict an indefinite proposition, we must consider whether it be equivalent to an universal, singular, or particular proposition, and then treat it accordingly.

SECTION IV.

OF THE CONVERSION OF PROPOSITIONS.

176. The conversion of propositions is generally thought an useless operation, yet in controversies it is often found of great importance, as may be seen by the dextrous use made of it by Dr. Hamilton, the present bishop of Ossory, in his celebrated demonstration of the existence and attributes of God *a priori*.

177. The conversion of a proposition consists in a new arrangement of, or some accession to, its terms, the sense of the original remaining unaltered.

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178. When

178. When the new arrangement consists in a mere change of the subject into the predicate, and of the predicate into the subject, it is called a *simple conversion*, as *some kings are tyrants* is converted into, *some tyrants are kings*: *no vicious man is happy*, is converted into *no happy man is vicious*.

179. If in the new arrangement, the quantity of the derivative proposition is expressed, which quantity was barely understood, but not expressed in the original proposition, this is called a *particular conversion*, and by the scholastics *conversio per accidens*: as *all men are animals*, then *some animals are men*; here the word *some* is added, but makes no change in the sense.

180. The general rule is, that the quantity expressed or plainly implied in the derivative, shall be the same as that expressed or implied in the original proposition.

181. If in the new arrangement, the subject of the original proposition becoming the predicate of the derivative, and the predicate becoming the subject, and to each of them the negative *sign not* is affixed (unless already included in the other,) this is called conversion

tion by contraposition. Thus Dr. Hamilton, in the above-mentioned dissertation, p. 142, argues: *whatever is contingent must have had a cause, therefore what had not a cause was not contingent: thus every man is mortal, is converted into no immortal being, (that is, no being that is immortal) is a man, or a being that is immortal is not a man; all these are affirmative by reason of the two negatives.*

182. Hence we see that conversion is a species of reasoning; for if the subject be identified, or any way connected with the predicate, as far as that connexion extends, the predicate must also be connected with the subject; and therefore, as it is affirmed of the subject, the subject may be affirmed of as much of it, as the connexion extends to. Thus if *A* be connected with *B*, then *B* must also be connected with *A*; but if *B* denotes a series of similar indeed but unconnected lines, then *A* will be connected only with that particular line with which it is in contact. See No. 103.

183. Then since the sense of the derivative proposition is exactly the same as that of the original, both as to quantity and quality, it

follows that if the original be true, the derivative must also be true, and *vice versa* ; in a word, if the original be true, false, probable, doubtful, possible, impossible, necessary, or contingent, affirmative, or negative, universal, singular, or particular, the derivative must exactly correspond with it, that is, it must be true, false, probable, &c.

184. As a proposition is said to be the converse of another, when its subject is the predicate of the other, so an argument is said to be the converse of another, when its antecedent is the conclusion of the other, and its conclusion the antecedent of the other.

185. In geometry, a proposition is said to be the *converse of another* ; when after inferring a conclusion from a supposition, the conclusion is itself supposed, and the original supposition is inferred from it.

CHAPTER IV.

OF COMPOUND PROPOSITIONS.

SECTION I.

OF COMPOUND PROPOSITIONS.

186. A *compound* proposition is that which hath two or more subjects, or one subject and two or more predicates, either expressly affirmed to be both true or to be both false, or that one is true and the other false, and neither of which can be considered as incidental to the other.

Hence a compound proposition consists of, or is resolvable into, two or more propositions, forming one sentence.

Of these there are ten kinds ; first, *conjunctive* ; second, *disjunctive* ; third, *comparative* ; fourth, *assimilative* ; fifth, *causal* ; sixth, *discretive* ; seventh, *conditional* ; eighth, *exclusive* ; ninth, *exceptive* ; tenth, *definitive*.

First,

First, Conjunctive.

187. *Conjunctive* propositions are those whose subjects or attributes, or both, are jointly connected by affirmative, or disconnected by negative terms, and consequently it is resolvable into as many partial propositions.

First, thus *Cæsar and Pompey were excellent generals*, that is, Cæsar was an excellent general, and Pompey was an excellent general; here the *subjects* are joined, and the proposition affirmative.

Second, so *Cæsar was an excellent and fortunate general*; here the predicates or attributes are conjoined.

Third, so *neither Cæsar nor Pompey loved their country*; here the subjects are joined by the negative terms, for the negation falls on the verb; for the proposition is equivalent to *Cæsar did not love his country*, and *Pompey did not love his country*.

Fourth, so *Pompey was vain and unfortunate*; here the predicates are joined. *Cæsar was neither rash nor cruel*; here the predicates are joined by a negative term, for it is equivalent
to

to two propositions, *Cæsar was not rash, and Cæsar was not cruel.*

Fifth, *so riches and power enable men to do much good and much evil*; here two subjects and two predicates are conjoined, and the proposition is equivalent to four propositions, if the subjects be taken *distributively*; or to two propositions, if the subjects be taken *collectively*, that is, the *aggregates of riches and power.*

188. When two subjects are conjoined, but the predicate is applicable only to the union or aggregate of both, the proposition is not compound, for it cannot be resolved into two propositions.

So to believe the doctrines of Christianity, and live according to those of Epicurus, is very extraordinary; here the predicate is inapplicable to each subject separately taken, and applicable only to the union of both. But if in this case there were two predicates, as *very extraordinary and contradictory*, then the proposition would be resolvable into two, and consequently compound.

189. A * conjunctive proposition is

* See Dr. Watts, p. 151.

false,

false, * if any of the propositions into which it is resolvable be false : thus the proposition *virtue and riches are necessary to salvation* is false, because riches are not necessary.

Hence a conjunctive proposition is contradicted by denying the connexion, or affirming a connexion if the proposition be negative : thus, in the above case, the *union of virtue and riches is not necessary to salvation* ; and in the first example, neither Cæsar nor Pompey were excellent generals ; and in the second, *Cæsar was not an excellent nor a fortunate general* ; and in the third, *both Cæsar and Pompey loved their country* are contradictory.

Second, Disjunctive.

190. A disjunctive proposition is that which contains either one subject, and two or more predicates opposed to each other, or two or more subjects opposed to each other, with one predicate, or two or more predicates opposed to each other ; † it is resolvable into as many branches or opposite propositions as the sense

* So ruled by Parker, chief justice, in the case of Buller and Meliffy, 1 Lofft, 185. 1 Strange, 76, &c.

† See Watts.

will admit. One or other is asserted to be true, but which of them, is left undetermined.

First, so *all wars are either just or unjust*, resolved into *all wars are just*, or *all wars are unjust*; here the predicates are opposed to each other.

Second, so *either Cæsar or Pompey could conquer the Parthians*, resolved into, *Cæsar could conquer the Parthians*, or *Pompey could conquer the Parthians*; here are two subjects and one predicate.

Third, so *favourable or unfavourable judgments arise either from ignorance or from partiality, or from prejudice*; here are two subjects and three predicates, and resolvable into six propositions. However, it may be said, that the first disjunctive *or*, is equivalent to the conjunctive *and*; but this does not always happen, as *all the judgments of the revolutionary tribunal, whether just or unjust, arose either from ignorance, or partiality, or prejudice*.

191. A *disjunctive proposition* is false, if all its branches or the propositions it is resolvable into are false, as *either the Jewish or the Mahometan religion is true*; but it is true, if any of its branches

branches is true,* as either the *Mabometan or Jewish, or Christian religion is true.*

191.^b Hence a disjunctive proposition is contradicted by *denying* the disjunction if affirmed, or *affirming* a conjunction if the disjunctive proposition be negative.

Third, Comparative.

192. A comparative proposition is that which either explicitly or implicitly contains a comparison, and consequently two judgments asserting that one thing is better, or a lesser evil than another thing; or if both be evil, that one is a lesser evil than the other, or that one state, &c. is more eligible than another, even if the other contain no ground of eligibility or any other comparison.

First, so *Cæsar was a better general than Pompey*, is resolvable into two propositions, *Pompey was a good general, Cæsar was a better.*

Second, so *death is in some cases preferable to life*, that is, *life is in some cases an evil, and death is often a lesser evil.*

Third, so *any religion is preferable to atheism*,

* So Parker, chief justice. 1 Strange, 76.

that

that is, *atheism is an opinion, but any religious opinion is preferable or is a better opinion.*

193. A comparative proposition is false, if the higher degree of comparison be false, as *the Mahometan religion is preferable to the Christian*, that is, *the Christian religion contains some truths, but the Mahometan more.*

194. So also, strictly speaking, if the positive degree be not found in both branches, or if both imply a falsehood; yet in common language this strictness is not observed; for whatever possesses any quality in a high degree, possesses more of it than what contains none at all: thus,

First, *the Christian religion is better than the Mahometan*, strictly speaking, is false, for it implies that the Mahometan religion is good. So also if it were said, *the Christian is truer than the Mahometan religion*, for truth admits of no degrees; we must then say, *the Christian is preferable to the Mahometan religion.*

Second, so *Pompey was a worse general than Cæsar*, is, strictly speaking, false, for it supposes Cæsar to be a *bad general*; we must then say, *Pompey was a less able general than Cæsar.*

195. Note,

195. *Note*, the word better frequently denotes not a greater good, but a lesser evil, as when it is said it is *better to live with a dragon than with a scold*.

195.^b A comparative proposition is contradicted, if destitute of foundation, by reducing the comparative to the positive degree. Thus in the first and second example, No. 194, the Christian religion is true, and the Mahometan false; but if the comparison has any foundation, the proposition is to be affirmed or denied, as the case may require, in the usual way.

Fourth, Assimilative, (usually called relative.)

196. An *assimilative* proposition consists of two branches, connected by terms expressing a similitude either of quality or quantity in the subjects or predicates.

So *such as is your company, such will be your character*; *in as far as a book is useful, in so far it is estimable*; *no poet so celebrated as Homer*.

197. An *assimilative* proposition is contradicted by denying the similitude.

Fifth, Causal.

198. A *causal* proposition consists also of two branches connected by terms asserting, that one is, or is not, the cause of the other; the assertion is often indicated by the words *being, through, for, as.*

So Cæsar defeated Pompey because his army was better disciplined.

So, Cæsar warred on Pompey, that or to the end, that he might remain sole sovereign of Rome. As Livy died before the reign of Nero, he could not write his history.

First, *so money is coveted, it being the instrument of procuring pleasure, that is, because it is the instrument, &c.*

Second, *so Christ died for the salvation of mankind; for* denotes the cause, then the two branches of the proposition are Christ died, and the salvation of mankind was the cause of his death.

199. A causal proposition is false, if either or both branches are false, or even if both were true, if the cause be falsely assigned, for what is false cannot be a cause : thus *all events are*

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necessary

necessary, because they were decreed by fate ; here both branches are false.

So all events are necessary, because they were foreseen ; here the first branch is false, in the second the fact is true, but the cause is falsely assigned,

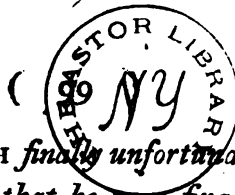
So Tamerlane was born under the constellation of Scorpius, therefore he was cruel ; here both branches are true, but the cause is falsely assigned.

199.^b A causal proposition is contradicted by denying the causation, as *Christ did not die for the salvation of mankind ; or Christ died, but the salvation of mankind was not the cause of his death ;* it might also be contradicted by denying that *Christ died*, for of course the causation is destroyed.

Sixth, Discretives or Adversatives.

200. A *discretive* proposition consists of two branches, connected with, yet distinguished from, and contrasted with each other, by reason of some opposition explicitly or implicitly contained in them, or denied by one of them.

First, thus *Hannibal was a great general, BUT finally unfortunate, or YET finally unfortunate,*



fortunate, OR THOUGH finally unfortunate, OR NOTWITHSTANDING that he was finally unfortunate, OR GRANTING that he was finally unfortunate, OR NEVERTHELESS an unfortunate general.

Second, so *Cæsar* was NOT ONLY a great, BUT also a fortunate general; in all these propositions the ability and the fortunes of the generals are contrasted.

Third, so *Brutus*, so FAR from being grateful, murdered his benefactor; here gratitude and murder are contrasted, not only was he not grateful but murdered his benefactor.

Fourth, so *Brutus* was unfortunate, BUT he deserved to be so; here any opposition between the merits of *Brutus* and his misfortunes is denied.

Fifth, the success of armies does not arise from their numbers merely, but from their numbers, discipline, valour, and the skill of their generals.

201. Discretive propositions are false, if either or both branches be false; and consequently they are contradicted by asserting the falsehood of either branch, or destroying the opposition, as *Brutus* was unfortunate, and deserved to be so.

Seventh, Conditional.

202. A *conditional* proposition exhibits two branches connected with each other by a condition annexed to one of them, and of this branch the other is asserted to be the consequence; it is then a species of reasoning of which the condition is the antecedent; so *IF Cæsar had not been murdered, he would have overturned the Parthian empire.*

So *PROVIDED you obey the laws, you will not be punished.*

203. A conditional proposition is false, if the consequence be not strictly deducible from the supposition; therefore to contradict it, we must deny the necessity of the inference: thus *if Cæsar had not been murdered, it does not necessarily follow that he would have overturned the Parthian empire, or yet he would not have overturned the Parthian empire*; but it would be true if the deduction were just, though both branches were false, as *if God were unjust, men would be unhappy.*

Eighth, Exclusive.

204. An *exclusive* proposition is that which
asserts

asserts that the predicate or predicates so agree with the subject, as to agree with that subject only and with no other: hence it is resolvable into two propositions, one affirming the agreement of the predicate with the subject, and the other denying its agreement with any other person or thing; or if the predicates be numerous into numerous propositions, there are two subjects, one fully and the other compendiously expressed by the words *only*, or *alone*, or *besides*.

Thus *George the Third ALONE is the monarch of England*; here George the Third is asserted to be the monarch of England, and that *no other* person is monarch of England.

So *George the Third is the ONLY monarch of England*; here George the Third is asserted to be the monarch of England, and the word *only* excludes all others from the monarchy of England, and from all participation of that monarchy; so that this proposition differs only in grammatical form from the former, but the purport of both is exactly the same. *

So

* Dr. Blair, vol. i. p. 251. A difference betwixt *alone* and *only*: *only* imports that there is no other of the same kind;

So *Adam was the only man created*, that is, Adam was created and *no other man* was created, which is exactly tantamount to *Adam alone was created*, or *no man except Adam was created*.

So *the Platonicks were the ONLY sect of Philosophers who maintained the immortality of the soul*; here it is asserted that the Platonicks maintained, &c. and that no other sect of philosophers maintained it.

So *homicide is lawful ONLY when committed through the necessity of self defence*; that is, *the necessity of self-defence renders homicide lawful, when that necessity exists*; it is unlawful *when that necessity does not exist*; which is equivalent to saying the necessity of self-defence *alone*, renders homicide lawful.

So *God ALONE is omnipotent and omniscient*, is resolvable into God is omnipotent, and God

kind; *alone* imports being unaccompanied by any other. There is a difference betwixt these phrases, *virtue only makes us happy*, and *virtue alone makes us happy*; the first imports that nothing else can make us happy, the second imports that virtue *by itself*, or unaccompanied by other advantages, is sufficient to do it.

is omniscient, and no other Being is omnipotent, and no other Being is omniscient.

205. Exclusive propositions are false, if the predicate does not agree with the subject, or agrees with more subjects than one; it is contradicted by denying the exclusion, as *George the Third is not the only king of England.*

Ninth, Exceptives.

206. An exceptive proposition is that which asserts the agreement of the predicate or predicates with two or more subjects, and not with any other subjects; and hence it is resolvable into two or more propositions, some affirmative and others negative, like the exclusive propositions: the exception is always a part of some whole.

So *the Greeks and Romans were the ONLY learned nations*, that is, the Greeks were a learned nation and the Romans also; and *besides them, or except them*, no other nation was learned; for the word only does not here stand for singly but for *exclusively*, and there are two subjects.

207. Hence the term *alone* is not suited to exceptive propositions, for it is properly ap-

plied to only *one* subject; for it denotes *all*, (that is entirely) *one*, from the German *allein nil nisi unum*, or *omnino unum*.

Thus we cannot say *the Greeks and Romans ALONE were learned nations*, for that would be equivalent to saying *the Greeks ALONE, and the Romans ALONE, were learned nations*; as the conjunction renders the proposition resolvable into separate partial propositions, and thus the proposition would be absurd and even contradictory; nor would it be less absurd, were the Greek and Roman nations supposed to be collectively taken, for'then it would imply that the collection of both *alone*, was learned.

Again, *ye shall all perish UNLESS ye repent*; that is, ye who repent shall not perish, ye who do not repent shall perish.

But *there is no omnipotent Being EXCEPT or BESIDES God*, is an exclusive proposition and not exceptive, for it is equivalent to God alone is an omnipotent Being, and there is but one subject.

An exceptive proposition is false, if the subject does not agree with its predicate, or if the predicate agrees with other subjects.

It

It is contradicted by denying the exception.

Tenth, Definitives.

208. *Definitive* propositions are those that mark not only the matter announced, but also its time, place, order, or circumstances, and consequently is resolvable into two or more partial propositions.

Thus *Cæsar was put to death in the seven hundred and tenth year of Rome, by those whose lives he spared when conquered.*

A definitive proposition is false, if any of the partial propositions, into which it may be resolved be false.

209. This proposition would be false, if Cæsar had not been put to death in the seven hundred and tenth year of Rome, or not by those whose lives he spared, or who were not conquered.

Hence we see there are many questions which cannot be answered by a simple affirmation or negation, that is, by *yes* or *no*; simple propositions only can thus be answered, See P. R. 216,

CHAPTER V.

OF COMPLEX AND MODAL PROPOSITIONS.

SECTION I.

210. A complex proposition is that whose subject or predicate is again repeated, either expressly or constructively; expressly by the pronouns *who*, *which*, *that*, *those*, *they*, &c. or by other referential terms, as *while*, *being*, *of*, *where*; or constructively, by an adjective, or even a substantive, annexed to the predicate or subject, the term so repeated being itself rendered the subject of another proposition, or resolvable into the subject of another proposition involved in the first, or dependent on some part thereof.

Examples.

First, a man who obeys God loves his neighbour.

Second, a pious man loves his neighbour.

Third, the city of Babylon was once powerful.

Fourth,

Fourth, Philip of Macedon formed an army which was well disciplined.

Fifth, the human mind is a simple substance.

Sixth, Alexander, whose army was invincible, intended to conquer the west of Europe.

Seventh, men being mortal, but whose souls are immortal, should endeavour to be happy in their future state.

Eighth, God who is merciful, is also just.

Ninth, men having all the same common parent, ought to love each other.

Tenth, the astronomical system which supposed the sun to move round the earth, which was held by Ptolemy, is now abandoned.

Eleventh, the opinion of Epicurus touching the origin of the world is false.

Twelfth, what men love, that they seek.

Thirteenth, where men are happy, there they should remain.

Fourteenth, while men are young, they should learn what they may afterwards want to know.

Fifteenth, I maintain the earth to be round.

Sixteenth, Copernicus maintained the earth to be round.

Seventeenth,

Seventeenth, the doctrine which taught the sovereign good to consist in animal pleasures, which was maintained by Epicurus, is unworthy of a philosopher.

Eighteenth, he who does the will of my father who is in heaven, shall enter into the kingdom of heaven.

Nineteenth, Cherea killed a tyrant.

211. In the first example, the *subject* is repeated and referred to by the pronoun *who*, the *man who* denoting the *man*, *which* man loves God; the reference is express.

In the second example, the reference is also to the subject of the proposition; but tacitly, being implied by adding the adjective *pious*, for it is equivalent to a man, *which man is pious*: the pronoun *who* includes that repetition.

212. In the third example, the reference is also to the subject; but *tacitly*, by adding the substantive *Babylon*, for it is equivalent to the *city which was called Babylon*.

213. In the fourth example, the reference is to the predicate *an army*, and it is express: there is also a reference to the subject, as in the third example.

In

In the fifth example, there is an implied reference to the predicate by the annexation of the adjective *simple*.

In the sixth example, the reference is to the subject and also expresses; *whose* is equivalent to *of which Alexander*.

214. In the seventh example, the reference is implied in the word *being*, and the proposition is also causal; for the meaning is, *men because they are mortal*, and a second express reference is made in the disjunctive proposition *but whose souls*.

In the ninth example, the reference is expressed in the word *having*, and is also causal, for it signifies *because they have*: other participles are also referential, and form part of a complex proposition.

In the eleventh example, the *opinion of Epicurus* evidently denotes the opinion held by Epicurus, or *which was bolden by Epicurus*.

In the twelfth example, the reference is made by the word *what*; thus *men seek that thing which thing they love*.

215. In the thirteenth example, the reference is made by the word *where*, as *men should remain in that place, in which place they are happy*.

In

In the fourteenth example, the first reference is made by the word *while*; *thus men while they are young*, that is, *at that time in which they are young*; the second by the word *what*.

216. In most of the above cases, the reference is made to the subject or predicate, or some words connected with them, but the word repeated is not always the subject of another proposition, as we may see in the sixth example, where the relative term *whose* repeats implicitly the antecedent *Alexander*, but in the genitive case: this repetition may equally be made in other cases; and hence I have added in the definition, *or dependent on some part thereof*.

217. A reference is also often made to a *whole proposition*, as in the fifteenth and sixteenth examples: thus in the fifteenth, the sense is, *the earth is round, this I maintain*; for though the phrase *the earth to be round* is in the infinitive mood, yet in the mind of the speaker it is evidently an affirmation, as appears by the words *I maintain*, which is only a declaration of the affirmation of the speaker.

But in the sixteenth example, the affirmation is contained in the first part of the proposition

fition *Copernicus maintained*, and not in the last: the first might be true, though the earth were not round.

218. The proposition to which, or to the subject or predicate of which the reference is made, is called the *principal*, being that whose assertion is principally intended; and that which refers to it, either expressly or constructively, is called *incidental*. In the seventeenth example, there are two incidental propositions; the first refers to the subject of the principal proposition, viz. the *doctrine*, and the second refers to that subject connected with the incidental proposition and explained by it; for the doctrine maintained by Epicurus was, that the sovereign good consisted in animal pleasures; this whole phrase is then referred to by the second *which*, and not the *doctrine* merely. In the eighteenth example, *he* (the man) is the subject of the first incidental proposition; and to a part of this proposition, viz. *of my father*, the second incidental proposition, *who is in heaven*, is referred.

219. The referential words *who*, *which*, &c. and the incidental propositions which they form, are either *restrictive* of the generality or ambiguity

ambiguity of the term, or proposition they refer to, or merely *explicative and declarative* of some property thereof.

Thus, in the first example, *the man who loves God*, who loves God restrains the generality of the word *man*, which it refers to, for *every* man does not love his neighbour, but only the man who loves God. So the implied reference in the second example is restrictive, not every man, but a man who is pious.

So, in the third example, the implied reference is restrictive.

In the fourth example, both references are explicative, for the first implied reference declares who that Philip was, and the second express reference declares his army to have been well disciplined.

So in the fifth, the implied reference is explicative.

So in the sixth, seventh, eighth, and ninth; in the sixth, the army is referred to by the genitive case and its property, viz. invincibility is declared.

In the tenth, the first incidental proposition is *restrictive*, for it is a *particular* system that
was

was rejected; but the second is *declarative*, as it merely relates that system to have been held by Ptolemy.

In the eleventh, there are two incidental propositions, the first implied in the word *of*,* and the second in the word *touching*; the first is clearly *restrictive*, the second is explicative, for it is tantamount to *which related to the origin of the world*.

In the twelfth, the incidental proposition is *restrictive*, for the generality of the word *thing*, which is referred to, is already restricted by the demonstrative *that*.

So also in the thirteenth and fourteenth, for the same reason.

The fifteenth example is only *verbally* complex, but not in reality; for it denotes no more than a mere affirmation by the speaker.

In the sixteenth, *Copernicus maintained*, is the principal proposition, the remainder is incidental; the reference is left understood, but may be expressed thus, *maintained an opinion, which is, the earth is round*: the reference is explicative.

In the seventeenth and eighteenth, the first

* Log. Port. Roy 186.

reference is *restrictive*, the second *explicative*; perhaps also it may be *restrictive* in the eighteenth, to distinguish his heavenly from his earthly father.

In the nineteenth, the reference is implied in the complicative word *tyrant*, and is explicative, for it is equivalent to *Cherea killed a man who was a tyrant*, namely, Caligula, and the word *tyrant* is itself a compendious expression of many more propositions.

SECTION II.

220. A *modal proposition* is that in which a reference is made to the *copula*; and when it involves both a principal and an incidental proposition, it is a species of complex propositions.

It is called *modal* because it mentions the mode, means, or manner ascribed to the verb which forms the copula of the principal proposition, or to the attribute identified with the copula; which manner is either fully expressed, or compendiously by an adverb, resolvable into an incidental proposition: or, more shortly, a modal proposition is that
which

which expresses the manner in which the predicate is asserted to agree or disagree with the subject.

First, this war was improperly conducted.

Second, the French revolution was effected by means equally cruel and impolitic.

Third, Cæsar was basely killed by those whose lives he had spared.

Fourth, this war is necessary.

Fifth, I am certain this war is necessary.

Sixth, I deem this war necessary.

Seventh, I think it probable that this war is necessary.

Eighth, it is certain that this war is just.

In the first example, the mode is expressed adverbially, and refers to the predicate identified with the verb; this is commonly a participle.

In the second, the mode is fully and not adverbially expressed, the referential term *which* is left understood, the sense being, by means *which were equally cruel and impolitic*; the reference is here also to the predicate *effected*.

In the third, there are two incidental propositions, the first modal, the mode being

adverbially expressed, the sense being in a manner which was base; the second is expressly incidental but not modal. Hence this and such like propositions are resolvable into three distinct propositions; the first, or principal, expressing the fact; the second, the manner; and the third, the authors, causes, or instruments.

In the fourth proposition the mode is implied in the predicate, for it denotes that the existence of the war is necessary, and refers to the copula, and thus differs from this proposition *the war is just*; for in this the quality and not the mode is denoted, and the predicate agrees with the subject without any particular reference to existence, which forms the copula: however, it is certain that this modal proposition is *complex*, notwithstanding the interposition of the copula *and*, for the sense is, *this war exists, and its existence is necessary*; it is therefore resolvable into a *conjunctive* proposition, but the pronoun *its* refers it to the former, being equivalent to *of which, the existence of which is necessary*.

The fifth proposition appears to me to be equivalent to the foregoing, for it is a bare affirmation

affirmation of the necessity of the war, and no assertion can be stronger than an absolute affirmation: if the phrase *I am certain* were a distinct proposition, it might be denied; but who can deny that *I am certain*, or convinced of that, of which I declare myself convinced? This also applies to the sixth.

The seventh example is modal and complex, for it is equivalent to this, *it is probable that this war is necessary*; or, more simply, *this war is necessary, which necessity is capable of proof*: necessity is affirmed to be its mode of existence, and *this* necessity is asserted to be capable of proof.

The eighth example is not modal but merely complex, for its morality and not its mode of existence is referred to; for it is equivalent to *this war is just and its justice is certain*: the first is the principal proposition, and the second is incidental.

221. To judge of the truth or falsehood of complex propositions, four cases should be distinguished. For, first, the principal may be true, and the incidental also.

Or, second, the principal may be true, and the incidental false.

Or, third, the principal may be false, and the incidental true.

Or, fourth, the principal may be false, and the incidental also.

222. The first and fourth cases admit of no difficulty.

But, in the second case, we must observe whether the incidental be *explicative* or *restrictive*; if it be *explicative* and false, yet the complex, in the opinion of most logicians, * is true, as *Alexander the son of Cyrus conquered Persia*; but if it be *restrictive* and false, then the complex is false, as *a figure which has three sides has four angles*.

In the third case, the complex is undoubtedly false, as *Alexander the son of Philip conquered Italy*.

SECTION III.

OF THE DISTINCTIONS OF COMPLEX FROM COMPOUND PROPOSITIONS.

223. To mark their difference may at first sight be deemed of little or no importance;

* Watts, Part II. chap. ii. sec. 5. Port. Roy. ninth edition, p. 188.

it is nevertheless of some, since it is certain that a compound proposition is false, if either of the propositions it involves is false, though the other be true, and consequently it cannot be affirmed upon oath ; but it is otherwise in mere complex propositions, for in the opinion of many logicians, these may be true, and consequently affirmed on oath, though one of the propositions involved in them, namely, the incidental, may be false.

224. We have already seen, No. 215, that in complex propositions, there is a reference to, and a repetition of, somewhat that preceded either explicitly or by implication ; but one of the branches of compound propositions also often refers to the other, which may occasion some difficulty with regard to the class to which they belong : to remove this, we must remark, that the reference peculiar to complex propositions is merely *grammatical* ; and that which exists between the branches of compound propositions, when any does exist, is *logical* ; one branch being affirmed, or denied to be, deducible from the other. Yet it may happen that both a grammatical and a logical reference should exist between

the two branches, and in that case the entire proposition may be deemed both compound and complex.

224.^b In complex propositions, two things have been remarked; first, a grammatical reference, either express or implied, to an antecedent, which is tacitly repeated by some pronoun or otherwise; and, secondly, the distinction of a principal and incidental proposition. The first property alone appears to me to be essential; for the existence of a proposition which may be regarded as *incidental*, that is, not necessary to the intelligence of the principal proposition, but merely collateral to it, is in many cases impossible; namely, in all the cases in which the reference is restrictive, as may be seen by recurring to such cases and omitting the references.

From Conjunctions.

225. These frequently have no grammatical reference to each other, but sometimes they have, *as this war is just and it cannot be avoided*: in this case they are at once both complex and conjunctive.

From

From Disjunctives.

226. These are always compound.

From Conditional.

227. A conditional proposition has frequently a grammatical reference, and then it may be considered as complex, though it contains no branch that can be called incidental.

228. But often also it contains no such reference, and then it cannot be considered as complex, having no property in common with complex propositions.

229. Again, if the express or implied reference of a complex proposition be *restrictive*, it may be resolved into a conditional proposition to which it is perfectly equivalent.

230. But if the reference of a complex proposition be *explicative*, it cannot be resolved into a conditional proposition, and differs from it in every respect.

Examples.

First, if a figure have three sides, it must have three angles.

Second, if a king is beloved by his people,
he

he is happy: the grammatical reference is express.

Third, a three-sided figure must have three angles.

Fourth, a king beloved by his people is happy: here the grammatical reference is implied.

Fifth, a figure which has three sides must have three angles.

Sixth, a king who is beloved by his people is happy: here the reference is express; and these propositions are equivalent respectively, and completely prove the assertion, No. 227.

Seventh, if Christ had not suffered, Jerusalem would not have been destroyed: here the conditional proposition contains no grammatical reference, and cannot be considered as complex, as said, No. 228.

In the third and fourth examples, the references are *restrictive*; and hence these complex propositions are convertible into the conditional propositions in the first and second examples, which proves No. 229.

Eighth, *the system which supposed the sun to move round the earth is now rejected*: here the reference being explicative, the complex proposition

proposition cannot be resolved into a conditional, as said, No. 230.

231. The following propositions, however, deserve attention, as they might be deemed objectionable to this assertion.

First, *God who is merciful, is also just*; cannot be resolved into *if God is merciful, he is also just*; for though this is in reality true, yet his justice cannot be inferred from his mercy: the inference is not logical, and, thus considered, the proposition is false.

Second, *where men are happy, there they should remain*; the sense is, *men should remain in that particular place, in which place they are happy*: this is resolvable into, *if men are happy in any particular place, in that place they should remain*; but the reference is plainly restrictive, being limited to a particular place.

From comparative Propositions.

232. A complex proposition derives from a comparative in this, that though a comparative like a complex may be resolved into two propositions, one of which contains a grammatical reference to the other, the second repeats with an addition the words it refers to, yet,

yet, contrarily to the nature of a complex proposition, the branch which contains the reference is the principal, and that which is absolute is merely fulcimental: thus *Cæsar was a better general than Pompey*, is resolvable into *Pompey was a good general*, and *Cæsar was a general more good*, or *was a general who was more good*.

From Causal Propositions.

233. These expressly or impliedly contain two propositions, one of which refers to the other, yet the reference is principally logical, asserting one to be the cause of the other; however, as logical and grammatical references do not oppose each other, a proposition may be at once both causal and complex, as in the following example.

Pilate condemned Christ because HE was timid, or through timidity. Brutus conspired against Cæsar to restore republican freedom: here the proposition is purely compound and causal, there being no grammatical reference.

From Discretives.

234. These are always complex, for one
branch

branch always has a grammatical reference to a foregoing, as has been well explained by Mr. Tooke; but they differ from those that are purely complex, by including another reference, namely, that of continuance, discontinuance, disparity, or opposition.

From Affimilative.

235. These are the reverse of the last mentioned; they always have a grammatical reference to each other, and therefore are in reality complex; but they also express a reference of similitude which distinguishes them from the merely complex.

From Exclusive and Exceptive.

236. These also are both complex and compound; compound, as one branch affirms and the other denies; and complex, as each refers to the other.

SECTION IV.

OF IDENTIC PROPOSITIONS.

237. An *identic* proposition is that in which the predicate is a repetition of the term expressing the subject, as *good is good*; or which affirms or denies the same thing in the same or exactly synonymous words, as *whatever is, is*.

238. Dr. Campbell, 1 Phil. Rhet. 105, well remarks, that as mathematical propositions are reducible to an identity with the preceding propositions from which they are deduced, and these in their turn are shewn to be identified with others, and thus progressively to the primitive axioms, it may be difficult to conceive how science can be advanced by such propositions; and it certainly could not, if the propositions were strictly identical; but when propositions, though in effect coincident, are presented under different aspects, that is, when what is single in the subject is divided in the predicate, or *vice versa*, or what is a whole in one, is regarded as
a part

a part of something else in the other ; such propositions are not identical.

So $10 = 7 + 3$, and $10 = 6 + 4$, &c. are not *identical* propositions, but rather *coincident*, or virtually only the same. See also Priestley's edition of Hartley, p. 159 ; and 6 Condillac, p. 136. 12mo.

PART II.

OF RATIOCINATION AND ITS ESSENTIAL PRINCIPLES.

CHAPTER I.

OF JUDGMENT.*

239. *Judgment* is an act of the understanding or intelligent power of the mind, affirming the predicate to be applicable, or not applicable, to the subject of the proposition, when the relation betwixt them is discerned or denied.

240. Hence, first, every judgment is affirmative, though the affirmation that the predicate is not applicable to the subject be usually called a *negative judgment*.

241. Hence, secondly, propositions barely announcing the states of one's own mind, or one's own actions, as I see, I feel, I am sick,

* See Condill, 1 Gram. 170. 240. Log. 314.

I speak,

I speak, I perceive, I judge, I will, I command, &c. are not judgments; for they require no comparison, no act of the mind, but are mere declarations of states of one's mind known by consciousness: it is otherwise, when the states of another person's mind are declared.

So also *I doubt whether*, &c. does not express a judgment, but merely a *state* of the mind; for *doubt* implies a refusal or suspension of the act of judging, neither affirming or denying the predicate to be applicable to the subject.

242. To form a judgment, properly so called, on any proposition, it is necessary to understand the full import of the words that express the subject and the predicate; and next to *compare* them with more or less attention, that is, to consider both attentively at the same time:* thus their relation to each other will be discovered, and consequently their agreement or disagreement with each other; upon the perception of which, the mind *affirms* their applicability to each other, or the

* 3 Condill. *Art d'Ecrire*, p. 11.

reverse, or rather actually applies them to each other. In this act of affirmation or application judgment consists: thus judgment implies two things; first, the discernment of the existence or non-existence of a relation; and, secondly, the affirmation or *denial* of that relation.

243. This comparison, where some attention is requisite, demands the concurrence of the will, and thus far judgment may be attributed to the *will*; but is properly an act of the *understanding*, as is evident in judgments that require no attentive comparison, but merely the knowledge of the signification of the subject and predicate, as in the propositions, *the whole is greater than any of the parts it contains or consists of*; *two and two are equal to four*, and other first truths and axioms: these judgments being necessary.

But before we enter further on this subject, it is proper to consider the nature of relations

CHAPTER

CHAPTER II.

OF RELATIONS IN GENERAL.

244. A relation in the literal sense imports an act of the mind, carrying back its attention from one object to another, after comparing them with each other: it thus discerns what the one is, or may be denominated, when compared with the other, or what some of its properties, circumstances, or conditions, may be denominated, when compared to those of another.

It may therefore be defined, the *state of an object comparatively to another object*.

245. Hence Locke * pronounces them to have no reality but in the minds of men; yet as the circumstance which induces the mind to refer one to the other, or, in other words, the *referibility* of the one to the other, exists independently of any attention of the mind to

* Locke, lib. iv. chap. xxx. sec. 4. And see *ibid*, chap. 25.

either: relations may in this sense be said to exist independently of any actual comparison and reference.

246. In many relations three things necessarily occur; the *subject*, that is, the thing or person referred; the *term*, namely the object referred to; and the ground or *foundation* of the reference.

247. Thus when a cat is compared to a tiger, the cat is the subject and the tiger the *term*, between which a similarity is discerned, and its *foundation* is the external form together with the natural disposition of the animals: the subject and term are called *correlatives*. In the relation of equality in mathematics, the foundation cannot be distinguished from the subject and term.

248. Some relations are *synonymous*; for instance, those of *similarity* and *equality*; for as a cat resembles a tiger, a tiger resembles a cat. Other relations are *heteronymous*; namely, when the relation which the subject bears to the term, is different from that which the term considered as the subject bears to the subject considered as a term. Thus the relation which a *father* bears to his *son*, is not the
same

same which a *son* bears to his *father*: the former is called paternity, the latter filiation. So the relations of king and subject, of cause and effect, husband and wife, obligor and obligee.

249. Of relations some are *real*, namely, those whose foundation has, or has had, a real existence, as that of *similitude*, *paternity*, *cause*, and *effect* (otherwise called *causation*), &c.; but some are merely *artificial*, as the relation of *signification*, for instance, of *words* to the objects they denote; and others natural, as the external appearances of things are the *signs* of the train of properties connected with them.

CHAPTER III.

OF THE RELATIONS ON WHICH JUDGMENTS ARE FOUNDED.

250. The relations on which *simple* judgments (that is, judgments not extracted by ratiocination) are founded, are, first, the re-

lation of signification or *inclusion*, * *identity*, *coincidence or equality*, *similarity*, *presumed similarity*; *relation to pleasure or pain*; *relation of correspondence of means to an end*, *correspondence of signs to the thing signified*; *relation to the mind*; *relation to power, of order, connexion, mutability, succession*; *time, situation, distance, quantity, action, laws of nature, opposition.*

251. The relation of *inclusion*, is that which complex, and also generic and specific words, whether forming the subject or in the predicate, bear to those words which denote the objects comprised within their complexity or the extent of their generality. *

Thus when I say, that *gold is yellow*, the judgment is founded on the relation of the signification of the complex word *gold*, with that of the attribute *yellow*, as yellowness is comprehended in the word *gold*, which denotes an *aggregate* of qualities or properties, as malleability, fusibility, a peculiar specific gravity, solubility in aqua regia, &c. of which *yellowness* is one, and consequently denoted by it, and comprehended in its signification. So

* See Locke, book iv. cap. i. sec. 3.

when

when I say *sugar is sweet*, I affirm that sweetness is comprehended in the signification of the word *sugar*, &c. *

This same relation is the foundation of the applicability of *generic and specific* words, whether in the subject or predicate : so when I say, *gold is a metal*, or *man is a substance*, I affirm that the aggregate of properties denoted by the word *gold*, agrees with those denoted by the word *metal*; or those denoted by the word *man*, agree with those denoted by the word *substance*, and consequently that these predicates are respectively applicable to their respective subjects.

252. Second, the relation of *identity*, when considering a being in different states or circumstances, and comparing what it is in the one with what is in the other, we find no other difference but that of the states or circumstances, and therefore judge it to preserve its essential distinguishing character in all of

* Unfortunately, mankind are not perfectly agreed on the signification of many complex words relating to moral or religious subjects, though all are, as to those that barely denote sensible objects,

them; or, in other words, that it is the same substance it *was*.

Thus *water*, when concreted into *ice* or dilated into *vapour*, is judged to be still the *same substance*; for it still preserves its original composition, and is reducible to its original state, without any change in its original properties.

253. Third, the relation of *coincidence* of signs differently arranged, or of *equality* in the simplest parts of arithmetic, algebra, or geometry, for in most of the propositions laid down in these sciences, these relations are discovered only by reasoning.

254. Fourth, the relation of *similarity*, or dissimilarity, either between two or more *sensations simultaneously perceived*, as when we judge that *two or more objects actually seen have the same colour*.

Or between a *sensation and an idea*, as when we say that an *object we now perceive, resembles one we formerly perceived*.

Or between two ideas, as that objects not present resemble each other.

On this relation, analogies and some figurative expressions and types are founded. See No. 51, 1112, 1113, 1115, 1120.

255. Fifth,

255. Fifth, the *presumed similitude of future to past events often repeated, and of the past to the present in similar circumstances*; this similitude is suggested by instinct, though in many instances confirmed by reason: the supposition is so much the stronger, as the past events have been oftener repeated, and with least variation in substance, though with much variety of circumstances. This similitude I call *suppositionitious*, because it is not discovered by an attentive comparison of objects, as that is which is often perceived between the qualities of sensible objects.

Thus we judge, and with the utmost confidence, that in our climate the sun will rise within twenty-four hours, though with some variation as to the precise hour, and that it has done so in all past ages. So we also judge that all animals now existing will die, and that those that existed one thousand years ago are now dead, though with much variation of age and other circumstances.

Judgments founded on this relation are called *belief*.

256. Sixth, the relation by which certain *objects are found connected with, or productive of*

of pleasure or pain, general, or partial happiness, or unhappiness, and the degrees of this connexion.

Thus we say, *that a false friend is worse than an open enemy, that is, more connected with our unhappiness than an open enemy is*: and thus we say, that an object is handsome, or deformed, the one producing pleasure and the other pain or disgust.

257. Seventh, the relation of *correspondence, or aptitude of parts to a whole, or of means to a proposed end*: thus we say, *that a house is well built when its parts are so constructed as to correspond with the uses for which it was intended*; or that *a political constitution is well framed when it answers the general purposes of internal peace, justice, and liberty*; or that *an army is well disciplined when it is so regulated, as to protect with most certainty and efficacy the society for whose defence it was raised.*

258. Eighth, this *correspondence*, when perceived, excites a peculiar agreeable sentiment called *approbation*, and the mind *judges or affirms* the arrangement which causes it, to be *right or proper*, and this in proportion as the correspondence is more perfect; and, on the contrary, if this correspondence is found
grossly

grossly defective or inadequate, a sentiment of *disapprobation* is excited, which is disagreeable or disgustful; and the arrangement which causes it, is judged to be *wrong* or *improper*.

Again, the sentiment of approbation being pleasing, and that of disapprobation displeasing, and disagreeing with the proposed end, the substitution of the former to the latter is desired, and the presence of that arrangement which produces it is required; this desire and requisition of the mind is expressed by the words *should* and *ought*: thus we say, that the arrangement *should* be such as to exhibit this correspondence and the consequent sentiment of approbation.

259. Also the author of this arrangement being justly required and expected to produce this correspondence, *ought* to produce it, or, in other words, was *obliged* to produce it, or it was his *duty* to produce it; this duty or obligation is felt by himself to exist, and the failure of compliance with it is attended with the painful sentiment of *regret*.

260. Further, to requite the author of pleasure with pleasure, and of pain with pain, is a wish

with naturally suggested to, and approved by the mind, and therefore *right* and *proper*; the omission of this requital is attended with disapprobation and pain, therefore its performance is an obligation, debt, or duty. And reciprocally, the *relation* betwixt the person to whom this requital is due and its discharge, is called his *merit*, or *right*, or, in other words, he is said to *deserve it*.

261. Ninth, the relation of *conformity*, or *correspondence* of signs, or propositions with the reality of the things signified, or announced: this is called *truth*.

Thus when I say the *Newtonian system is true*, I mean that the propositions comprising this system are conformable, or correspond with the real state of the objects they announce.

262. Tenth, relation of *objects to the faculties or various states of the mind*, as perceptions, ideas, judgment, emotions, affections, aversion, desires, &c.; and reciprocally of the mind and its states to various objects, and of these states to each other. Thus we say, that objects are mentally represented, judged, willed, desired; pleasure, and the objects that procure it, are
coveted,

coveted, pain shunned, friends favoured, foes hated, the repentant pardoned, &c.

263. Eleventh, the relation of *objects or actions to the power of producing them* and reciprocally.

Hence the denominations indicating this relation, as *possible, able, necessary, contingent, dependant, created, produced.*

264. Or *to the power that supports them*; and hence they are said to be *established, confirmed, or precarious.*

265. Twelfth, the relation of *mutability or immutability of states*; hence the denominations *permanent, constant, variable, transient.*

266. Thirteenth, the relations of *succession, time, situation, interval or space*; and the species of each, as *velocity, tardiness, contiguity, distance, superiority, inferiority, parallelism, collaterality, priority, posteriority.*

267. Fourteenth, the relation of *order*, as in the distinct ranks of society, *king, subject, magistrate, master, servant.*

268. Fifteenth, the relations of *connexion, association, union, participation*; as *parent, offspring, ancestor, descendant, cousin, &c.*; or *friend, ally, countryman, &c.*

269.

269. Sixteenth, the relations of *quantity* whether *proper* (as that which is mensurable) or *improper*, that is, which is barely susceptible of degrees; as *great, small, finite, infinite, equal, unequal, singular, plural, many, few, rare, dense*.

Analogous to these are the relations of *excess* and *defect*; on these comparisons are founded,

270. Seventeenth, the relations of *qualities* and *actions*, as *intensity, violent, forcible, remiss, feeble*.

271. Eighteenth, relation to the *known laws of nature*, as *ordinary, extraordinary, miraculous*.

272. Nineteenth, the relation of *opposition*, as *friend* and *foe*, and all the other relations we have mentioned, contrasted with those that are contrary or contradictory to them; and all *privations* to the qualities or properties whose absence they denote, as *blindness, lameness, darkness, imperfection, criminality, &c.*

The relation of *bodies to their different states*, properties, modifications, and of these modifications to each other and their respective incidents; or of *mind to its modifications and habits*.

273. The sense which Mr. Locke annexes
to

to the word *judgment*, is very different from that I have given, No. 239—243. He tells us, book, iv. chap. 14, sec. 3; “ the faculty “ which God has given us to supply the want “ of clear and certain knowledge, where it “ cannot be had, is *judgment*, whereby the “ mind takes its ideas to agree or disagree, or “ (which is the same thing), that a proposition is true or false without demonstrative “ evidence in the proofs; which arises sometimes from necessity, as better evidence “ cannot be had, and sometimes from indolence, ignorance, or haste: judgment then “ is the putting together, or separating, ideas “ when their *certain* agreement is not perceived but presumed; that is, as the word “ imports, taken to be so, before it certainly “ appears.”

274. In this definition of judgment, no other philosopher agrees with him. *Johnson* defines it to be the power of discovering the relation of one term, or one proposition to another. *Watts* calls it the affirmation or negation of the agreement or disagreement of one idea with another. *Duncan* says it is an act of the mind assembling ideas together, and joining

joining or disjoining them according to the result of its perceptions of their agreement or disagreement. *Doctor Reid*, in his treatise on intellectual powers, says it is an act of the mind whereby one thing is affirmed or denied of another.

275. According to *Condillac*, and some modern French philosophers, judgment consists in the mere perception or rather discernment of the agreement or disagreement of ideas; and where judgment is founded on the perception of the relation of identity, this may be said with some appearance of truth, as when I say three times five is fifteen: yet even here I affirm the words or signs of these terms to agree; but in all other judgments, it is plain I may suspend my assent, even after the agreement or applicability of the predicate to the subject is perceived, upon a suspicion that further consideration is requisite, otherwise judgments founded on merely apparent agreements could not be avoided: a determinate affirmation is therefore requisite. Besides, when I say a *learned man*, &c. I perceive a relation between the predicate and subject, but do not affirm any thing nor judge.

276. But

276. But *Condillac* advances somewhat still more extraordinary; he tells us that all judgments are sensations: thus, says he, “ when “ I say *this tree has branches*, it is certain that “ the sensation is single, yet I must make use “ of the general word *tree*, and the general “ word *branches*, and affirm their co-existence “ in my sensation by the word *has*. So if I “ say *this tree has no branches*, the sensation is “ equally simple, for it barely exhibits a tree “ without branches; but to express it, I must “ separate the general words by the negative “ sign *no*.” But he should consider, that in fact those propositions are not judgments, but only declarations of the states of the mind of the person who announces them, as already said, No. 241; and in the same manner if it had been said *I saw this tree with branches*, the proposition would announce no judgment, but only declare the *idea* of such a tree: ideas being only the copies of sensations. But when we speak of the sensations or ideas of other minds, we do not announce our own sensations, but we *judge* of those perceived by others, for such judgments are founded on the perception of relations; thus when I say

L *travelling*

travelling to London you saw trees ; this judgment is founded on the relation, No. 262, of the faculty of seeing to the trees that exist on both sides of the road. The falsehood of this opinion is equally evident, when we consider the various judgments we make of things that cannot be the objects of sense, as that *the soul is immortal*, *God is just* ; or those relative to notions, as *religion is respectable*, *judgments frequently require deliberation*, &c. ; or judgments grounded on testimony. In a later work, Condillac expresses himself more justly. See *Grammaire*, vol. i. p. 169, 170, &c. See also 6 Condillac, 22, where he contradicts his former opinion that judgment is a mere perception of a relation ; and 1 Condillac, 257.

Of Evidence.

277. The affirmation which constitutes judgment, is always accompanied with a sentiment of a peculiar kind ; if strong, it is called *confidence*, *boldness*, or *firmness* ; and if feeble, *suspicion*, *belief*, *doubt* ; or *hesitation*, which is more or less strong or feeble, according as the relation betwixt the subject and predicate, on the perception of which, the affirmation

affirmation is founded is more clearly, fully, and accurately discerned, or that no relation exists.

278. The full and accurate discernment of the relation is called *evidence*; and if it be immediately discerned when the signification of the words that express the subject and predicate is understood, it is called *intuitive evidence*, and the act of discerning it is called *intuition*. Thus when it is said *the whole is greater than its part*, this judgment is founded on the relation of *quantity*, No. 269, which is instantly discerned when the signification of the words *whole* and *part* is known; the proposition is therefore called *evident*. The affirmation or judgment expressed by the word *is*, is called *true*; and the proposition itself is called a *truth*, and, being discovered by intuition, a *first truth*, as it requires the intermediation of no other truth to prove its truth: but in most cases, the evidence is discovered only by a train of reasoning, as will be seen in the sequel.

The relations on which judgments attended with evidence have in many cases been grounded, are first, that of *signification* of

words, No. 251; of *coincidence*, No. 253; of *quantity*, No. 269; the *mental*, No. 262; that of *power or cause and effect*, No. 263; of *correspondence* of means to an end, No. 257; the relations of *succession, time, situation, space*, No. 266; of *opposition*, No. 272; and also of moral *obligation, right, and merit*.

279. The evidence which consists in the actual full and clear discernment of the relation betwixt the subject and predicate, is called *direct*; but besides this, there is another sort of evidence not less clear and convincing, founded on this principle, that since two contradictory propositions cannot be true, *any proposition contradictory to a proposition evidently true, must be false*: and conversely, *any proposition contradictory to a proposition evidently false, must be true*: this evidence is called *indirect*.

And hence it is impossible to be and not to be.

280. The evidence on which judgment is founded on the relations above mentioned, is called *metaphysical*; and where quantity is concerned, *mathematical* evidence.

281. Evidence is not always confined to the discernment of relations, and then it denotes

notes an immediate clear and distinct knowledge: this evidence attends the *consciousness* of our perceptions, and the actions of our mind and all that affects it; for when we attend to them, we clearly know that those perceptions and actions exist and are our own.

282. The relation, in the investigation of which, evidence has been most uncontrovertibly attained, is that of *quantity*, because the terms and signs are always used in their literal sense; and those which express the union of parts *distributively* considered, and those that express the whole *collectively* considered, are known to be *synonymous*: thus the words *two united to two*, or $2 + 2$, are known to be synonymous to four or 4, which may be exhibited to the sight and feeling; and because the signs which express the higher degrees have been so arranged as to be incapable of ambiguity: thus 1001 is immediately understood to exceed by one unit 1000, and the signs that denote even the most complicated forms, have been settled and traced by pre-concerted rules equally incapable of ambiguity, and require only memory, patience, and attention to develope and reduce them to

their simplest forms. So in geometry, the conformity of each proposition with some other proposition, whose relation to primary truths and axioms had already been unambiguously discerned, is shewn with equal clearness when the attention and memory are sufficiently strong.

283. But other relations, not capable of being determined with such precision, are expressed not by simple signs but by *words*, whose signification cannot be exhibited to the senses, though taken from sensible objects and consequently metaphorical. Sometimes ambiguous, and differently understood, and contracted or extended in the minds of different persons: in no science does this ambiguity oftener occur than in metaphysics. Thus Mr. Locke applied a signification to the word *judgment*, very different from that which this word denotes among all metaphysicians: thus the word *idea* has frequently been misapplied by most writers. The Romans long understood by the word *virtue* only *courage*, nor is its signification even at present unanimously settled.

284. Hence the evidence most frequently attainable.

attainable in treating of these relations is the *indirect*.

285. Evidence is always accompanied with certainty, but *certainty is often destitute of evidence*: thus some Mahometans are as certain of the truth of their religion as we are of ours, to say nothing of our own various sects; yet none will say that both are founded on evidence. Evidence arises from intuitive, demonstrative, or instinctive knowledge; certainty, often from early habits, a partial view of a subject, or a passionate regard for some sentiment or opinion. Evidence excludes all possible doubt; certainty only all actual doubt. Evidence is contrasted with obscurity; certainty with probability or doubt. We are certain that future events of a physical nature will correspond with those that we have heretofore constantly and uniformly experienced, but we have no intrinsic evidence of such correspondence and conformity in all cases; for, as Hume justly observes, the contrary involves no contradiction.

And here, for the sake of perspicuity, it may be proper to notice a few general circumstances in which this assurance arises, and

which serve to distinguish it into distinct species.

286. The first is *metaphysical* certainty, which is commonly attended with, and grounded upon, evidence. This attends our actual sensations and other perceptions, and the clear and distinct memory of the past, and all demonstrative reasonings deduced from our perceptions, &c.

287. The second is *physical* certainty, which is seldom attended with evidence; of this nature is the assurance that attends the belief or expectation of any future physical fact.

288. The third is moral certainty, which attends self-evident, or demonstrative moral truths, and frequently the belief of the past, or expectation of the future actions of rational agents. It is often grounded upon, but often also unaccompanied by, evidence.

289. The fourth is of a mixed nature, regarding past or distant physical facts, which we have never experienced, and is grounded partly on their conformity with our own experience, and partly on testimony. Sometimes the one, and sometimes the other, is the predominant ingredient that produces this certainty.

CHAPTER

CHAPTER IV.

PROPERTIES (IN A LOGICAL SENSE) ARE SUCH CHARACTERS AS ARE FOUND IN ALL THINGS, AND IN WHICH THEY AGREE WITH, OR DIFFER FROM, EACH OTHER.

Of essential Properties.

290. *Essential properties* are those which so necessarily result from, or accompany the essence of a being, that without them a thing would not be what it is: of these many are unknown by us, but many also of various things are known, and without a knowledge of these, or some of these, one thing cannot be distinguished from another.

291. Of essential properties, some are similar in all things, and some in a great variety of things; these and the terms that denote them are called *generic properties*, or more shortly *genera*.

292. But this multitude of things which possess similar generic properties, possess also
other

other essential properties, whose similarity extends to a smaller variety of different things ; these (unless the variety of things in which they are found be the smallest possible) are also called *generic*, and (comparatively to the former) *subordinate genera* ; and in some occasions, *orders, tribes, or classes*. But such of these essential properties as are found similar in the smallest variety of different beings, which possess the same generic properties, are called *specific* properties or species : the beings that possess them are said to be of the *same species*, and are called *individuals* or *specimens*, which in many cases are distinguished from each other by different names or adjuncts.

293. Thus we see that specific properties include, and are consequently subordinate to the generic, but not *vice versa* ; so the lower genera include and are *subordinate* to the higher : and in this sense, the higher genera are *paramount* to the lower, and these to the species that include them.

These distinctions and definitions, together with their application, may be thus exemplified.

294. The most general character, attribute,
or

or property, of all the different things that really exist, and evidently essential to all of them, is *existence* itself, or *being*; and hence all things that exist are called *beings*. In this respect, all things are similar to each other: it is not, however, a generic word, but rather a general denomination.

295. Now a great variety of beings possesses the properties of animal life, and a great variety of beings do not possess these properties; those that possess them, and are in that respect similar to each other, are called *animals*: this appellation being therefore applicable to all of them is *generic*, or denotes the *animal genus*.

Those beings that do not possess the properties of animal life, have no single general appellation, but barely that of *inanimate*; but this being applicable to a great variety of beings, whether terrestrial, as earths, stones, salts, &c.; or celestial, as the sun, moon, and stars, is also *generic*, and denotes what is called the *inanimate genus*. Neither of these genera being subordinate to the other, they are called *co-ordinate*.

296. In the *animal genus*, two important distinctions

distinctions are observable, for some animals are capable of reasoning in certain circumstances and periods of their life, and these differ but little from each other, except in external unessential properties. The property therefore of animal life, conjoined with the capacity of reasoning, which are essential and similar, though in different degrees, in all of them, are denominated *specific*, and constitute a species called *man*; and the individuals in which they are found, are said to be of the human species. They are distinguished from each other by various names, as Peter, John, &c.; and frequently by highly remarkable physical characters, which, however, I consider as unessential: for even if a man were metamorphosed into the shape of a brute, yet if he retained his rational capacity, I should still consider him as of the human species.

297. But of other animals which do not possess the capacity of reasoning, and therefore called irrational, there are numerous varieties that differ not merely as individuals by slight unimportant circumstances, but in external forms totally unlike in internal structure and constitution, in the power of exercising the

the functions of animal life only on land, or only in water, in their mode of production and other important particulars. With respect to these, the appellation of *irrational animals* is not specific but highly *generic*, and includes many subordinate *genera*.

298. Besides those properties that are considered as essential, there are others that are the necessary consequences of those properties, and may be called *peculiarities*, or peculiar properties of some species of beings. Thus language is a property-peculiar to the human species, and the necessary result of his mixt nature. So to have the square of one of its sides equal to the squares of the other two sides, is the necessary property of a right angled triangle.

299. Lastly, properties that do not appear to us to have any necessary connexion with the essential, are denominated *accidental*.

CHAPTER V.

OF OPPOSITION AND MEDIUMS.

300. Four sorts of opposition are commonly distinguished: the *contradictory*; as that between something and nothing; the *contrary*, which exists betwixt qualities or properties that exclude each other from the same subject at the same time, and in the same respect, as *heat* and *cold*; *privative*, as *life* and *death*; and *relative*, as *cause* and *effect*, for nothing can be the cause and effect of itself.

301. *Disparate* are those things which differ as widely from many other things as from each other: thus a man differs as widely from a horse as from a goat.

302. *A medium* is what lies betwixt two extremes, and is equally distant from both. Of these two sorts are distinguished; namely, a medium by *participation*, as warmth between *heat* and *cold*: thus air at 32° is deemed cold, and at 97° is deemed hot, but at 65° is deemed

deemed warm. A medium by *exclusion*, is that which excludes both extremes: thus frugality excludes both avarice and prodigality.

CHAPTER VI.

OF DEFINITION AND DESCRIPTION.

303. A definition is a declaration of the nature of an *object*, or of the signification of a *word*, or an enumeration of the several simple ideas, or notions couched under any terms in the relation in which they stand to each other.

304. To *describe* is to enumerate the external appearances of an object, or to denote it by its effects in given cases: thus men are described by their size, bulk, features, complexion; age, and other peculiarities; the aggregate of which serves to distinguish one individual from another.

305. Hence definitions are of two kinds, *real* and *nominal*: thus the nominal definition of *God*, is the *supreme sovereign of the universe*;
and

and the *real*, is a *being whose existence is necessary*; for this denotes the essential property that distinguishes him from all other beings, and from which all his known attributes may be deduced: the other denotes only a relation.

306. To define a corporeal object, is to indicate its physical constitution, that is, the ingredients of which it consists and their proportion; for this composition constitutes its nature, and alone remains, when all its modifications are altered: thus water may be defined a compound of eighty-seven parts by weight of oxygen, and thirteen of hydrogen airs in a concrete state, or in that proportion. Now whether this water appear in the state of ice, or in that of a liquid, or in that of vapour, this constitution remains unaltered.

307. The *nominal* definition of water, or rather of the word *water*, is an inodorous, colourless, tasteless, liquid, convertible into steam at the heat of 212° , and into ice at the temperature of 32° , and a solvent for salts, gums, &c.: these properties are indeed sufficient to distinguish it, but do not announce its composition.

308. The

388. The real and nominal definitions frequently coincide; namely, where the name is taken from the external appearance or disposition, and the nature, essence, or constitution, also consists in something perceptible by the senses: thus the definition of a *triangle*, both real and nominal, is a figure that is bounded by three lines; and of a *chiliagon*, is, that it is a figure that hath one thousand angles; and of a *circle*, that it is a plain figure consisting of a line, every part of which is equally distant from a central point; for from these definitions, the properties of these figures are deduced.

309. Sensible objects that consist of an aggregate of properties, either apparent to the senses, or discoverable by their relation to other objects, and which are either *simple*, or at least are so, relatively to our actual knowledge of them, are incapable of a real definition; but a nominal definition, and a description, is sufficient to distinguish them from each other.

Thus the constitution of metals, various fossils, and vegetables, is as yet unknown; but they are all sufficiently distinguishable

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by

by appropriate nominal definitions and descriptions.

310. Our knowledge of the composition, or physical constitution, of bodies, does not enable us to deduce their obvious properties from their constitution, nor can we find any connexion between them: thus the knowledge of the constitution of water does not enable us to explain why it is liquid at certain temperatures, why it is tasteless, why it is a solvent, &c.; but it is of great importance in affording us an explanation of various chymical phenomena, as the illustrious Lavoisier has shewn in numerous instances.

311. But in mathematical, moral, and metaphysical sciences, definitions are of more general importance; for from the definition of a triangle or circle, their properties may be successively deduced: and the reason is, because the properties of these figures are relations essentially connected with them, and with each other; whereas the properties of mere sensible objects bear either none, or only an arbitrary relation to each other.

312. When the object to be defined is known, partly by consciousness, partly by the testimony

testimony of our senses, and partly by the most cogent analogies, its nature is defined by indicating the parts thus known. Thus *man* being defined to consist of a body and a peculiar intelligent principle, with respect to ourselves, we know this by consciousness; but with respect to other men, we know them to be such by the testimony of our senses as to their bodies; and we infer the existence of an intelligent principle similar to our own, from the analogy of their actions, wants, and desires, with our own in similar circumstances.

313. With respect to substances, of which, not being objects of sense, we have only notions and not ideas, as *God* and the *human soul*, we must define them by indicating some property by which they resemble or bear some analogy to other beings, and some property by which they are necessarily distinguished from all other beings, or at least from those of a different species: thus *God* is defined to be *an intelligent Being whose existence is necessary*. As an intelligent Being, there exists some analogy betwixt his nature and that of the human soul; but the necessity of his existence distinguishes him from all other beings.

§14. Ideas, sensations, volitions, passions, and in general all modifications of the mind, are incapable of being explained by any definition to those who have not perceived or felt them: however, many of them are marked by characteristic external appearances, or peculiar properties or effects; and to many affections, *names* have been given, which, when superficially considered, denote only some leading sentiment; yet, when this sentiment is attentively considered, it will be found to be accompanied by, and originate from, a groupe of less prominent sentiments, the developement of which constitutes the definition of that name in the same manner as the few original properties to which the name of *gold* was originally given, are now associated with all the properties subsequently discovered in that metal, and denoted by, and comprehended in, that name, though only a few are generally known, and the enumeration of all these constitutes its definition. Even the simplest sensations may in some measure be described by their common properties and their peculiar effects: thus *redness* cannot indeed be defined, yet it may be described to be

be a colour occasioned by a ray of light of all others the least refrangible.

315. The various disorders, whether mental or corporal, by which mankind are afflicted, are capable only of a nominal, not a real definition.

316. The notions we attach to words expressing *power, faculty, cause, principle, activity*, are capable of a nominal definition, but that particular constitution of the mind to which they owe their existence is unknown.

317. The notions of *right, wrong, virtue, vice, obligation*, and the various distinctions of dominion, are capable of real definitions with which the nominal also coincide: they are also capable of being described by their effects.

318. Both definitions and descriptions should be as short as the intelligence of the names and things defined will permit them to be: they should be such as to suit nothing else more intelligible or less ambiguous, and capable of being substituted for the word defined.

318.^b Many have thought the definitions of certain words useless, as they do not render their signification better known, but this is a

mistake: one principal use of definitions, is to assign a *precise* signification not subject to variation in various circumstances, as the vague signification of words frequently is.

CHAPTER VII.

DIVISION.

319. This, in logick, denotes either an enumeration of the several species that may be arranged under a generic appellation: thus under the appellation animal, rational and irrational animals may be arranged.

Or, secondly, the subdivisions of any quantity: thus a fathom is divided into yards or feet, a yard into feet, and a foot into inches.

Or, thirdly, the distinct component parts of any whole, as a book is divided into chapters, and these into sections, &c.

Or, fourthly, the several properties attributable to any being: thus the attributes of the Divine Being are divided into *physical*, as omnipotence, omniscience, eternity, &c.; or *moral*, as goodness, mercy, justice.

Fifthly,

Fifthly, the properties, one or other of which a subject must possess, but not both together: thus every number is *odd* or *even*; all bodies either *move* or are at *rest*, &c.

Sixthly, the different senses of which a word is susceptible, or in which it has been understood.

The rules of complete division are,

320. First, that the members of the division should comprehend the whole extent of the object divided: such is the division of *number* into odd and even.

321. Secondly, that none of the members of a division should contain any of the other members; yet when they are considered under different relations, this rule is not infringed. Thus the object of geometry is divisible into *lines*, *surfaces*, and *solids*; though lines are necessarily included in surfaces, because they are objects of separate consideration; but opinions are not accurately divisible into *true*, *false*, and *probable*, but rather into true and false, for probable opinions may be true or they may be false.

322. Thirdly, that the parts into which any whole is first divided, should be the

largest and most comprehensive: thus a kingdom is divided into provinces, and these into counties, &c.; Europe is divided into countries situated above lat. 50° , and those situated below lat. 50° , &c.

323. Fourthly, that the subdivisions should not be too numerous, as such overload the memory and introduce confusion.

PART III.

OF THE DIFFERENT EFFECTS OF RATIOCI- NATION,

These are conviction, certainty, belief, persuasion, presumption, opinion, or doubt.

The means of producing these effects are called *arguments* or proofs.

CHAPTER I.

OF PROOFS.

324. In general it may be said, that the means of discovering and ascertaining either truth or falsehood are called *proofs*; and in this sense, the middle term, which shews the agreement or disagreement of a subject and predicate, may be called a *proof*; but more particularly it denotes an argument, or a series of arguments,

arguments, immediately or gradually collecting the truth or falsehood, doubtfulness or uncertainty of any assertion, from other truths, either already assented to or generally known; so that to prove a proposition, is to manifest its truth. All proofs are either *demonstrative, indubitable, probable, or doubtful*, of each of which some notice shall be taken.

CHAPTER II.

OF DEMONSTRATION, OR DEMONSTRATIVE PROOF.

325. A demonstration is an argument, or a series of arguments, whose premises are self-evident, or at least previously proved and agreed to, and whose conclusion is truly and necessarily inferred.

326. The result of demonstration is called *knowledge*, that is a clear and immediate perception of the truth demonstrated; this is knowledge in the strictest sense of the word; but if the demonstrated truth was extracted from a series of previous demonstrated propositions,

sitions, the conclusion being grounded on premises whose evidence is barely *remembered*, is not direct and immediate, and consequently somewhat less perfect: yet if upon a re-examination of each of the premises their truth be ascertained, and confirmed by the testimony of adequate judges, no shadow of doubt any longer remains; and in fact, after a certain length of time, the truth of all demonstrations, whose premises are forgotten, rests on the memory of its having been formerly demonstrated, and also on the testimony of others; and consequently the knowledge thus retained, partakes of the nature of *belief*.

327. Demonstrations are of two sorts, for they are consequences deduced from principles agreed to, or causes already known to exist, or from the nature of the subject of the demonstration, and such are called demonstrations or arguments *a priori*, as the premises are supposed to be known before the conclusion.

Or, secondly, they deduce the existence of a cause from the nature of phenomena already known to exist; and, as all effects are posterior

to

to their causes, these demonstrations are called arguments *a posteriori*.

328. Hence we see the difference between *intuitive* truths and *demonstrated* truths; the former being immediately perceived as soon as the terms are understood, and the latter only by the intermediation of reasoning. The existence of our minds and of our perceptions is intuitively known; that of the supreme Being, and of many of his attributes, is known only by reasoning.

329. Demonstrations *a priori* are contained in, and deduced from, premises whose evidence is either intuitive or demonstrated. Demonstrations *a posteriori*, the existence of phenomena being either admitted, or proved by the testimony of the senses, prove the absolute impossibility of their existence, if the existence of something which is denominated their cause, be not also admitted: both these species of demonstration are *direct*.

330. Nearly allied to these are demonstrations *ab impossibili*, or *ex absurdo*: these establish the truth of any assertion, by laying down a proposition directly contradictory to the assertion to be proved, and shewing that
this

this contradictory proposition is also contradictory to some established maxim or truth. It differs from demonstration *a posteriori* in this, that it is not deduced from an admitted truth, but from the opposition of its contradiction to an admitted truth.

331. To this we may also annex a demonstration used by antient mathematicians, called the *method of exhaustion*, by which they proved the equality of two quantities by a *reductio ad absurdum*; shewing that if one quantity be supposed greater or less than the other, there will arise a *contradiction*.*

332. Mathematicians, and particularly Mr. Frenicle, also use another method of demonstration in arithmetic, called the *method of exclusion*, previously shewing that certain numbers (suppose all odd numbers, or all even numbers) are unfit for the solution of a problem; and then gradually excluding others, until they arrive at one number (or set of numbers) which alone afford the solution. This method may also be extended to other subjects, if all the hypotheses concerning

* See Hutton's Dictionary: .

certain objects can be enumerated, and only one can be supposed to solve the question proposed, as Marfh has done.

333. The evidence of the *actual* perceptions of our senses is equal to that of any demonstration, and is therefore justly called by Mr. Locke *sensitive knowledge*. Book iv. chap. iii. p. 139.; and chap. xi. sec. 9. p. 255.

334. In *physical* subjects, no demonstrations, properly so called, can be had, except as far as certain experiments are actually observed by our senses, which observations are equivalent to demonstrations, or as far as certain results are *a priori* deducible from certain allowed properties of bodies.

335. In the *science of morals*, many truths are capable of demonstration, inasmuch as it contains many self-evident axioms, from which consequences may demonstrably be deduced; yet it must be owned, that demonstrations are much more difficultly obtained in this science than in any other, for several reasons.

First, because definitions of the terms to be employed are not universally agreed upon.

Secondly, because these axioms are not
founded

founded on the signification of words and the relations resulting therefrom (as of whole and part, greater and lesser,) nor on the arrangement of signs ; nor can in any way be subjected to the testimony of the senses, but are merely collected from the feelings of mankind in certain similar circumstances, which are often deranged, if not effaced, by education, custom, example, and passion.

Thirdly, because they frequently limit each other ; their application, and even their just expression, varying with those circumstances : thus the axiom, *that we should do to others what we wish them to do to us*, is limited by another axiom, *that the guilty should be punished* ; and is to be understood with various other modifications, according to the various relations in which other persons stand with respect to us : however, both Locke and Leibnitz think that morals may be demonstrated.

CHAPTER III.

OF INDUBITABLE PROOFS, THAT IS, PRODUCTIVE OF CERTAINTY.

336. *Certainty*, as we have already seen, is that state of mind in which we experience a full assurance, or confidence of the truth or falsehood of any assertion; and therefore such positions as are deduced from premises, which, though not evident, produce this confidence, are emphatically styled *proofs*, as contradistinguished from demonstrations and mere probabilities.

337. With this state of mind, all *actual* doubt or even suspicion of falsehood is incompatible, and therefore excluded; and the propositions thus affirmed or denied are called *certain*, and so also are the objects they denote.

338. Certainty is either *genuine* or *suspicious*: genuine is that which originates from indubitable arguments that approach most to
a de-

monstration, being most consonant with established truths, whether *metaphysical*, physical, moral, or critical, &c. *Suspicious* is that which is founded on proofs of an ambiguous nature, being sometimes just; but in many cases fallacious, and therefore in all cases requires to be verified by a careful scrutiny.

339. Again, *indubitable* proofs are either *direct* or *indirect*, or *mixed*: *direct* proofs, in *speculative* subjects, are assertions of whose truth we are convinced or certain, after having ourselves considered and examined them; or as to *facts*, such as are consonant to our own personal and general experience: thus we believe, independently of any testimony, *that the sun has risen before we were born*.

340. *Indirect* proofs are the legitimate consequences of the direct; such are duly-conditioned *testimony* as to matters of fact, and sufficient and approved *authority* as to speculative doctrines.

341. *Testimony* is the sole medium by which we can be certain of the *existence* of things, persons, or facts, which our own senses have not witnessed, and of which we have no direct proof.

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342. With

342. With regard to *facts* (under which denomination I comprise all the above objects) we must remark, that some are perfectly indifferent, their occurrence or non-occurrence being consonant to common observation; such as the arrival of a ship at a seaport usually frequented, the fall of rain on some day in December, the death of a person at an advanced age, &c.; these I shall call *common, ordinary, or equicafual facts*.

343. Some are *extraordinary*, such as the birth of twins, the sudden natural death of young persons, frost in the month of June, and such like facts that rarely occur.

344. Some are *marvellous*, being the results of natural powers, with whose extent, and some of whose existence we were previously unacquainted; such as certain monstrous animal productions, as animals with two heads, the strength of Sampson or Milo, the comprehensive abilities of Newton, the memory of Dr. Wallis, the phenomena of gunpowder, magnetism, electricity, galvanism, &c.; nay, even the most common phenomena previous to their observation, as the congelation of water must have appeared to the inhabitants

inhabitants of the lowest latitudes: all these facts respectively varying from common experience, must at first excite wonder and repel belief.

345. Lastly, those that are *miraculous*, which not only vary from, but directly contradict expectations and maxims grounded on universal and uniform experience, being produced by means similar to those which such experience has proved to be inadequate to their production: thus such experience has taught us that no dead man has ever re-assumed life at the command of another man. But the Scripture assures us, that some dead men have been restored to life by the mere command of another man, and many more similar facts.

To these we may annex *supernatural appearances*, such as that of angels, which do not indeed contradict the experienced results of natural powers, but are evidently independent of, and underived from, them.

346. The testimony by which we are convinced of the existence of the fact attested, must be such as we are certain cannot be false, for the mind reasons thus: of the existence of objects which I myself perceived by my

senses, I have the fullest assurance; I have also the fullest assurance, that other persons who perceive objects in the same manner must have the same certainty of their existence; and if this certainty can be transmitted to me without any diminution, it is equivalent to that which myself could acquire; but I have the most solid grounds to expect such transmission, when the testimony is accompanied with the following circumstances. These circumstances are;

347. The first necessary circumstance, is a sufficient power in the witness of distinguishing or discerning the object attested: with respect to simple objects of sense, where no slight-of-hand nor imposture can reasonably be suspected, nor any failure or uncommon use of the organ of sense in the witness, this qualification may be supposed; but, in other cases, it may be necessary to prove it.

348. Secondly, uniform experience of the veracity of the witness on numerous similar instances, and of his known character and deportment: it is on such repeated experience, that our certainty of any future physical event rests. It is true, that physical events resulting

ing from necessary causes, cannot deviate from their usual course; whereas, the mind of man, not being subjected to unvarying causes, may be influenced by various motives to decline from its usual line of conduct; but from this circumstance we can only infer, that a certainty of the absence of all such seductive motives, is requisite to establish the fullest assurance of the veracity of the witness in any particular instance: how this certainty may be obtained we shall presently see.

349. Thirdly, the accord and correspondence of such circumstances as should naturally be expected to precede, attend, or follow the fact attested.

350. Fourthly, the sanction of an oath, with a due knowledge of the civil and religious penalties annexed to its breach.

351. Fifthly, the concurrent and uncontradicted testimony of other unimpeached witnesses.

352. Sixthly, the detriment, loss, or punishment, knowingly incurred in consequence of the testimony.

353. Seventhly, its opposition to early, favoured, and settled opinions, or inveterate

prejudices entertained by the witnesses, and to revered authority.

354. A testimony fortified with all or many of these circumstances, must inspire a confidence of its truth so complete, as to banish all suspicion, even without requiring previous experience of the veracity of the witnesses, or the sanction of an oath. On the third and fifth only, the certainty of the existence or most foreign countries, and of the now existing princes is founded. The bare oath of an unknown person, unconfirmed by circumstances, can never inspire such confidence as amounts to a certainty, and scarcely a strong probability.

355. The motives that may seduce a witness to deviate from truth, and render his testimony suspicious are, first, its tendency to promote or support his own interest, or that of his relatives, friends, or party, whether civil or religious, or of his profession, or general pursuits; secondly, love of the marvellous; thirdly, affectation of singularity; fourthly, the fear of offending others, and of incurring shame or punishment.

356. The circumstances that tend to falsify
a testi-

a testimony are, first, the contradiction of other witnesses equally credible; secondly, its incoherence with, and still more its opposition to, preceding, concomitant, or subsequent incidents; and, thirdly, the bias of the witness towards *bigotry*, enthusiasm, fanaticism, or superstition, in cases wherein facts connected with these are concerned.*

357. The testimony requisite to prove the facts classed in No. 342, 345, must be so conditioned, as that its falsehood should be more

* *Bigotry* is a blind and outrageous attachment to any party or tenet. A belief, stronger than the reasons (known to the believer) on which such belief is founded, is called *bigotry*.

Enthusiasm in general is a vehement impulse or expansion of the imagination, resembling that arising from intoxication. *Religious enthusiasm*, is a strong but ungrounded persuasion of some divine communications or revelations to one's self: it is susceptible of various degrees; its extreme and most violent degree is *fanaticism*, which impels the enthusiast to commit the most frantic actions, and to embrace the most senseless tenets. *Superstition* is a groundless persuasion of the supernatural efficacy of certain practices, words, actions, or things; or of supernatural appearances, or of a fancied connexion of certain natural phenomena with future distant events, whether physical, moral, or political.

opposite to our experience than the existence of the fact attested, or its non-existence, if that be asserted.

358. With respect to *ordinary facts*, this prevalence of testimony always occurs ; for as our experience of the existence of such facts is *variable*, any testimony whose veracity has been found constant, and which, in the case in question, is known, or rationally presumed, to be uninfluenced by any of the seductive motives, No. 355, nor attended with any of the degrading circumstances, No. 356, must impress the fullest confidence of its truth, and amount to a full proof.

359. With respect to *extraordinary facts*, it must be noted, that all these are at first *marvellous*, it is only their repetition that is merely extraordinary ; now their opposition to previous and general experience, in similar cases, is nearly of that kind which logicians call *subcontrary*. Experience says, *this has rarely happened* : testimony asserts, *this has lately happened*. The testimony then only adds one more to the number of instances ; the fact has been allowed to exist ; when therefore it is *complete*, it amounts to a full proof.

360. *Mar-*

360. *Marvellous* facts are such, merely because unsupported by any previous experience; a child wonders at every thing new to him, but his growing experience gradually informs him of the existence of numerous facts, which his previous experience in other places, times, or circumstances, had not reached. The existence therefore of other facts of this class ceases to be improbable, and becomes certain when evinced by complete and multifarious testimony.

361. *Miraculous* facts being contradictory to general and uniform experience in similar cases, attesting the natural impotence of the visible means employed to effect them, can be proved by a testimony conditioned, as in No. 348, 349, 350, 351, and 353: as the fact may be effected by a supernatural power, but the falsehood of the testimony is absolutely impossible.

362. *Supernatural* facts resemble those denominated *marvellous* in this, that they oppose no known natural power, but are simply unsupported by any experience, either of our own or of many past ages: they also resemble the *miraculous* in this, that they are not the effect

effect of any mere corporeal power, but solely of that which is supernatural; that is, a power, not comprised in the system in which the succession and fabric of corporeal nature are regulated. As their existence has often been imagined and affirmed by persons of a disordered imagination, and fraudulently feigned for selfish purposes, though it is not impossible, yet in any particular instances, it can be proved only by a testimony, whose falsehood must be deemed impossible, either through the reasons mentioned, No. 351—4, or through the concurring attestation of a miracle.

SECTION I.

SUFFICIENT AUTHORITY.*

363. Authority is the right that different persons duly qualified have, or in other words, the propriety and reasonableness, that the *facts* they attest, or the uncontradicted *deci-*

* Authority in general is either *imperative*, as that of revelation, or of the laws; or *suasorial*, as the *testimonial* and *destrinial*.

sions on objects known to them, should be received by others, though strangers to those facts, and unacquainted with the grounds of such decisions, as a full proof of their truth; the first may be called *testimonial*; the second, *doctrinal* authority. The first has been already considered; of the second I shall here treat.

364. Of the existence of such a right, and of its sufficiency to produce a confidence amounting to a full proof in many cases, there can be no doubt; it is on such authority that persons, ignorant of astronomy, believe that the sun is many thousand times greater than the earth; or that it is stationary, and that the earth turns round it, &c.; and on the uncontradicted authority of persons of the medical profession, courts of justice constantly rely on the most important occasions, when the object is fairly and solely within the sphere of their knowledge; and have even laid down as a maxim, *unicuique in sua arte perito credendum*.

365. By *right*, I again repeat, I mean not a *claim*, but a conformity to reason, similar to that which those who *see* have to lead the blind, or of those that *hear* to instruct the deaf:

deaf: in these cases the conformity to reason is evident, because the utter privation of the senses in some, is contrasted with the full possession of them by others; in the same manner a total ignorance of the grounds of a decision on some subjects on the one part, and a demonstration of the point decided upon on the other part, is here supposed.

366. But I must further add, that this right is possessed only by an aggregate of persons; for as no man is infallible, so there is no *certain* connexion betwixt the decision of any man, and the truth of the point decided. But if several persons in the same, and in foreign countries, uncontradicted for some years, by persons equally credible and uninfluenced by any seductive motives, agree in the same decision, though possibly with some variation of circumstances, assigned causes or degrees, such agreement can be attributed to nothing else but to the evident truth of the point decided, equally discerned by all of them.

367. Moreover, to produce in others an absolute certainty of the truth of such a decision, it is further necessary that its truth should

should be *known* (in the strict sense of the word) to the persons deciding it; that is, *demonstrated*, if the subject be capable of demonstration, and not merely an *opinion*, for if so, it can be received by others, only as a high probability, and not as an absolute certainty.

368. Lastly, a decision admitted in any subject as a full proof, must be proposed in terms in some sense intelligible, and not repugnant to the evident principles of reason, whether metaphysical, logical, or moral.

First, it must be in some sense intelligible in order to be believed, for belief of any sort implies an assent to the agreement of the predicate and subject of the proposition proposed; if therefore both or either be not intelligible, it is impossible that such agreement can be discerned, the predicate and subject, or either of them, being in that case mere insignificant sounds. So if it were decided that *blytric* was *hocardo*, or that the human soul was *bocardo*, such a proposition could neither be directly believed nor denied, being neither understood nor bearing any reference to any thing known; so also if known words be used in an unknown sense, they become equally
unintelligible

unintelligible with those insignificant words just mentioned: thus if a person ignorant of the signification of *hypothenuſe*, and of that of *ſquare* in the mathematical ſenſe, be told that the ſquare of the hypothenuſe is equal to the ſum of the ſquares of the other two ſides of a triangle, though he ſhould know that all mathematicians in all ages have demonſtrated its truth, yet he cannot expreſſly and directly believe it, much leſs ſhould he deny it, no more than he can deny the truth of a propoſition expreſſed in a foreign language.

369. But if a propoſition be couched in terms *partly* underſtood, and *partly* not underſtood, yet ſo as to offer any intelligible ſenſe, it may be believed as to the intelligible part: thus if a perſon ignorant of what is meant by the fluxionary or differential calculus, be told that this mode of calculation is highly uſeful, he may believe that there exists a mode of calculation called the *fluxionary*, and that it is highly uſeful; for the terms *calculation* and *uſeful* are known to him, it is only the mode of calculation that is *not* underſtood by him: thus, we all believe, or at leaſt may ſuſpect, that bodies may poſſeſs many

many *unknown* properties, as those of *electricity* and *galvanism* were, not many years ago.

370. So also we may believe a proposition conceived in terms *generically* the same, as those whose signification is known to us but *specifically* different, and therefore in that respect unknown to us: thus blind men may, and in fact do, believe that *colours* exist, and that those who *see* perceive objects at a distance; for a blind man may know, that smells, tastes, sounds, and feelings by tact, all of which he is acquainted with, are called *sensations*, on account of their reference to different organs of sense, and that, though widely different from each other, they agree in being *perceptions* by different organs; and he may be told, that *colours* are also sensations equally different from those he is acquainted with, and perceived by the eyes, though he can form no distinct specific idea of that sensation; but he can thus have a *notion* of what is meant by the word *colour*, and this is all any of us can have of what is meant by the word *substance*, and of many other things. The possibility of perceiving by *sight* objects at a distance,

tance, he may also conceive and be convinced of, having experienced that *sounds* also indicate the existence of distant objects; and as they are conveyed to his ears by an intangible medium, the air, which he knows, so may other perceptions be occasioned by another intangible medium called *light*, conveyed to the eyes of those who see, though he can form no distinct specific idea of that medium; but the representation of visible objects, by pictures and mirrors, he scarcely understands, though perhaps an echo may lead him to some notion of them.

371. The truth of all that has been here advanced, is set beyond all doubt by considering, that lately Dr. Saunderson, and at present Dr. Moys, though blind from their nativity, not only understood all that has been here said, but much more, for they have even given excellent lectures on opticks.

372. Nay, a proposition whose terms have not the same exact sense according to which we understand them, but merely bearing some *analogy* to it, differing both in manner and degree, may yet be intelligible, and consequently believed: thus we believe the first
cause

cause of all things to be *intelligent, good, and merciful, &c.* in the abstract sense of those words, though his intelligence is totally different from ours both in manner and degree, his goodness infinitely greater, and his mercy different from ours, which, being sympathetic, includes some mixture of pain; but in him is a disposition infinitely greater to produce the same effects; namely, to pardon offenders, without any mixture of pain, and therefore bearing only a signification analogical to ours, the similarity being chiefly in the effects produced by that disposition.

373. Secondly, these decisions must not be contradictory to principles intuitively or demonstratively evident; for if such principles can in any case be false, we can no longer have any certainty of any thing: thus it being intuitively evident that *a thing cannot be and not be at the same time and in the same respect*, no proposition contradicting this principle can be believed on any authority whatsoever.

374. So it being evident, that *two things equal to, or identified in any respect or degree with a third thing, must be equal to, or identified in the same respect or degree with each*

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other :

other : any decision repugnant to this maxim, must be rejected as incredible.

375. So in morals, it being intuitively evident, that *guilt cannot be incurred without some act of the will, or blameable omission of the person supposed to incur it*, any doctrine contradictory to this maxim must be false.

376. And hence in our law, though precedents be of high authority, yet such as are unreasonable and contrary to the first principles of natural justice are not to be adhered to, for *tantum habent de lege quantum de justitia*.*

377. So in the famous case of Bath and Montague, Lord Chancellor Nottingham, after consulting the chief judges of England, decreed in opposition to their unanimous opinion, and so the law has ever since been taken.†

378. Nay, though statutes are of supreme authority, yet if they are against common right and reason, they may be adjudged void.‡

* Hobb. Reports, 270.

† Third chancery cases, folio.

‡ 8 Rep. 118. Dyer, 313, *per curiam*.

379. So

379. So in theology, though the words of holy writ be of the highest possible authority, yet if their literal and obvious sense be contrary to evident or demonstrated truths, it must be rejected: thus it being demonstrated, that the Supreme Being is incorporeal and far removed above all human passions, those passages in which it is said that he *repented* having made man, that he *waxed angry*, &c. and those in which the *eyes, arms, &c.* of a human body are ascribed to him, must be taken in a figurative sense. So though it be expressly said, that God made man after his own *image*, than which words nothing can be clearer; and though it is related historically, yet no Christian now believes that God has a body to whose likeness that of Adam was made; but *image* is forcibly taken in a sense different from the literal, and not even perfectly agreed on.

CHAPTER IV.

OF AMBIGUOUS OR SUSPICIOUS PROOFS.

380. Ambiguous proofs are those, which abstractedly considered have no intimate or necessary connexion with the truth of the conclusion they are adduced to prove; yet are by the inattentive generally considered as satisfactory, and in reality are in some cases found on examination to be just and solid, but more frequently erroneous.

381. Judgments resting on such proofs, without any research into their validity, are called *prejudices*.

382. Most of these proofs consist in an indiscriminate reliance on *authority*, and a few on reasons still more fallacious: those grounded on authority are,

383. First, *the authority of early instructors*; which originates chiefly on the reiterated experience of the younger part of mankind, that the assertions of the elder, with respect to the
qualities

qualities of sensible objects and the consequences of their actions, were *true*; and partly on association with the sentiments of love and respect which they entertain for them: hence they are easily persuaded that the opinions also, recommended and earnestly impressed on their unprejudiced minds by persons so beloved and revered through every sense of duty, must be true. The belief thus formed, is farther confirmed through habit, glories in its pertinacity, and unsuspicious of the frailty of its foundation, becomes impatient of contradiction and rejects all examination, as some sects condemn all inquiry, as necessarily implying doubt, which they consider as criminal.

384. It is on such authority that all the contradictory religions of different countries are for the most part embraced: persons now professing the Christian religion, would, if born and educated at Constantinople by Mahometan parents, be as zealous Mussulmen; or if in India, Gentoos; the Mufti, if educated in Rome, would be a Roman Catholic; and if in London or Geneva, a Protestant, and *vice versa*; the Pope, if educated in Constantinople,

tinople, would be a Mahometan; and if in London, a Protestant.

385. Thus true opinions may as well be derived from education as false opinions; it is therefore an ambiguous proof of the truth of any opinion, though the general plea for obstinately adhering to it.

386. Secondly, *the authority of eminent and respectable persons*: the acknowledged merit of Aristotle, Plato, and Cicero, among the ancients; and of Aquinas, Grotius, Locke, and Newton, in modern times, forms undoubtedly a strong presumption in favour of the opinions they have adopted: yet, as many of their opinions were founded on prejudices, many on false information, and some on evident misapprehensions or false notions, and infallibility can be ascribed to no man whatsoever; their bare authority, unsupported by convincing reasons, can never be relied on as absolutely decisive: its utmost extent reaches no further than to form a favourable presumption before examination, or in the conflict of opposite opinions supported by reasons apparently of equal strength, to incline us to embrace that which they favour.

387. Thirdly,

387. Thirdly, *the authority derived from the antiquity of opinions transmitted through and adopted by succeeding generations*: deference and unbounded submission to such opinions prevail in all nations, whether savage or civilized, with scarce any exception; and by many is still carried to the most extravagant length, so as to stop the progress of all improvement: witness the Chinese and Gentoos. Even the wisest of the ancients were so far enslaved to such opinions, that Cicero and Plutarch assert that their belief in the existence of a Supreme Being rested principally on its being transmitted to them from their ancestors. Symachus, the most eloquent of the Pagan apologists, urged with great force the antiquity of the Roman worship against the substitution of the Christian, as the religion of the state. La Mothe le Vayer relates, that the French rustics broke out into a rebellion on being obliged to substitute iron instruments of agriculture to the wooden, which their ancestors were accustomed to employ.

388. Perhaps the following distinctions should be taken; first, with regard to most *speculative* opinions handed down from

ignorant barbarians, their falſhood may fairly be preſumed; but ſuch of theſe opinions as have been received with reluctance, and yet have been retained after a free and impartial examination, by unprejudiced inquirers in civilized and learned ages, may be preſumed to be true. Secondly, that in *practical* matters, ſuch as law and government, the greateſt regard is to be paid to antiquity: ancient cuſtoms, to which moſt nations are fondly attached, forming the baſis of moſt of their laws, and of our own conſtitution in particular; *nolumus leges Angliæ mutari hæc-tenus uſitatas et probatas*: however, the abuſes which time introduces or reveals, or a marked change of circumſtances, renders a gradual innovation here alſo proper and neceſſary. Hence the antiquity of any opinion or practice is at moſt an ambiguous proof of the truth of the one, or of the rectitude of the other.

389. Fourthly, *authority grounded on the general conſent of nations*: this proof, like the foregoing, is alſo ambiguous. With reſpect to ſuch opinions as are the reſult of the moſt ſimple reflexion, and analogous to the cuſtomary inferences of mankind in the common occurrences

occurrences of life, it seems to me, that their general adoption is a conclusive proof of their truth, such opinions being only an extension on speculative subjects of the general argument from uniform and universal experience; and, in other cases, the result of the genuine and unvarying moral sentiments of mankind. Such seems to me, in the first place, the opinion universally held by all nations who have reflected on the subject, that there exists a powerful and intelligent Being, who has arranged and set in order the system we inhabit: it is impossible to reflect on the structure of animals, the adaptation of their component parts to their several purposes, and on the regular succession of the seasons, without perceiving sensible marks of intelligence and superior power: hence all nations that have bestowed any consideration on such subjects (as most, even savage tribes, have) concur in acknowledging the existence of a Supreme Intelligent Being; but their subsequent inferences being the offspring, not of reason, but of fear, fancy, or fraud, deviated into the grossest absurdities; for from their fears originated the belief of a malevolent principle,

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and the horrid practice of human sacrifices; and from their fancy, the numerous and absurd fables of Pagan mythology, and various superstitions; and to fraud, we must ascribe oracles, and the various arts of divination.

390. The obligatory force of lawful promises and treaties, and the still more revered sanction of an oath, acknowledged by all nations, both savage and civilized, receive the fullest confirmation from this general consent.

391. So also (the existence of a Supreme Ruler of mankind being presupposed) the general unsophisticated feelings of all men, of justice and injustice, their approbation of the one and their resentment of the other, suggested the expectation of another state of existence subsequent to the present, in which a due retribution of rewards and punishments should take place: the immediate suggestions of reason or nature could dictate nothing further; their subsequent notions of a future state were the mere figments of imagination, and accordingly varied with the fancies and passions of different nations.

392. Belief in magick or witchcraft, and in various modes of divination, as astrology, augury,

augury, lucky and unlucky omens, &c. has also universally prevailed; but as this persuasion cannot be traced to, or at least is not the legitimate consequence, of any rational principle, its universal reception lends it no sort of force; it was in fact derived partly from fraud, and partly from broken and imperfect traditions of the events that immediately preceded, accompanied, and followed the universal deluge, of which some account is given in the sacred writings.

393. Hence we may conclude, that the general consent of all nations in holding opinions immediately deducible from rational principles, is a sufficient proof of the truth of such opinions, but that it affords no force to opinions founded on mere imagination or sensible appearances.

394. For the consent of nations either embracing or rejecting any opinion concerning natural phenomena, does not form any proof of either the truth or falsehood of such opinions, even when apparently proceeding from the immediate testimony of their senses, as these in fact prove no more than the reality of the sensations they transmit, but do not, and cannot

cannot point out the *causes* of those sensations; yet these causes mankind have blindly assumed, when in general incapable of such investigation, nice speculations of this nature being to them totally uninteresting and unnecessary. Now the opinion of one thousand purblind men concerning objects removed beyond the sphere of their vision, deserves no more attention than that of one purblind man: thus all nations, and most of mankind, have believed, and still believe, that colours and other sensible qualities exist out of, that is, are external to the mind that perceives them, and totally independent of it, so as to exist even when not perceived: though at last some philosophers have demonstrated the impossibility of such independent unperceived existence of colours, sounds, and tastes, yet they have very inconsequentially stopt here; and many still assert the independent existence of other qualities as purely sensational as those they admit to be such. So also the greater part of mankind believe the magnitude of the moon exceeds that of any star; that the earth remains unmoved while the sun and stars revolve round it, and unanimously re-
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ject and ridicule the notion of antipodes, &c. &c.

395. Fifthly, *the authority of a majority*: this may be considered either with respect to a majority of voices in legislative or juridical councils, or with respect to majorities deciding on mere speculative subjects. In the first, as all the members of such councils have equal rights, and as their voices may be counted but not weighed, there is a necessity of submitting to the opinions of a majority, whether right or not. But in mere philosophic or literary subjects, as there is no necessity of submission, the authority of a majority is questionable, its decisions having frequently been found false, while that of the opinion of the minority in such assemblies has afterwards proved true: thus the majority of the medical faculty of Paris proscribed the use of antimonial and other chymical preparations, which at present are found so powerful and useful. The majority of the synod of Dordrecht, condemned the opinions of Arminius, which were evidently more consonant to reason, and have since been generally embraced. Lord Chancellor Finch stood single
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in his opinion against the two chief justices and chief baron, and yet all subsequent lawyers follow it. The Royal Accademy of Paris disapproved and severely criticised the *Cid* of Corneille, yet all Europe has since been loud in its applause.

396. However, if such assemblies can be supposed to consist of persons apparently well informed, and the majority free from premeditated designs, unbiaſſed by antient unexamined theories, and uninfluenced by present interests and prevailing paſſions, or bigotted party ſpirit, it muſt be allowed that their deciſions afford at leaſt a ſtrong preſumption of their truth, and may be received as a proof where better direct contradictory evidence cannot be had, and in ſubjects that admit of any doubt : ſo a minority in a jury may yield to the ſentiments of a majority in a doubtful point.*

397. Sixthly, *the authority of modern opinions* : if the authority of antiquity has been extravagantly overrated two centuries ago, it was unreaſonably undervalued, towards the

* Godwin, V. Philips, 3, G. 3d. 3 Loſt's Gilbert, 1294.

close of the last, and doctrines delivered under its sanction have indiscriminately been ridiculed as *prejudices*, as if their rash rejection, were not as truly a prejudice as their unexamined adoption; *truths* may as well be implicitly received as falsehoods, and in fact such prejudices are relied on in the most important concerns of human life. Thus logarithms are employed by navigators, surveyors, gaugers, &c. who never investigated the principles on which that mode of calculation is founded; the substitution of modern to ancient opinions not evidently absurd, without a rigorous examination, is less pardonable than mere adhesion to the ancient, which may be presumed to have been received and approved in preceding ages; but if their original adoption can justly be supposed attributable to oblique and improper motives, antiquity can in vain be pleaded in their favour.

398. It must also be allowed, that received modern opinions concerning the causes of natural phenomena, or criticisms of ancient facts, being cautiously received and duly considered, are *in general* of more authority, than ancient opinions or traditions of those facts;
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the former being the results of more numerous, varied, and accurate experiments, of the application of more perfect or better adapted instruments, or longer and more accurate observation : and the latter of a more enlarged view, a more rigorous comparison of ancient testimonies, and a fuller discussion of the credit they merit. Yet I have said *in general*, for in some, though indeed but in a few instances, some of the best established opinions during the greater part of the last century, have been satisfactorily refuted towards its conclusion :* truth is indeed the daughter of time, but her birth is often long protracted.

* As that concerning the origin of the Septuagint, see Mach's Dissertation in Long's Bibliotheq. Vol. I.

CHAPTER V.

OF FALLACIOUS PROOFS.

399. These are derived either, first, from false or uncertain traditions; or, secondly, from false hypotheses; or, thirdly, from false but vulgarly received maxims; or, fourthly, from false definitions; or, fifthly, from false interpretation of ancient works; or, sixthly, from words falsely understood; or, seventhly, from retortion.

400. First, *false traditions*: such are the fabulous accounts of the philosopher's stone, which have misled and still mislead many; the inextinguishable lamp, the wandering Jew, sympathetic powders, and an infinite number of legendary tales both Pagan, Jewish, Christian, and Mahometan; as that of the suckling of Romulus and Remus by a wolf, which, however, was so firmly believed, that other fables of the same nature were rendered credible by their analogy to it; as that of Habis having been suckled by a deer as Justin owns:

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may, on such feeble foundations many rights have been claimed and asserted, both in ancient and modern times.

401. Secondly, *false hypotheses*: geometers have frequently assumed false hypotheses, to evince the truth of the propositions they mean to establish, from the absurdity of the consequences resulting from hypotheses that contradict them; and in this manner they may perhaps be often advantageously applied in other subjects. But many mathematicians supposed the fluxionary mode of calculation grounded on the notion of infinites, nay of infinites infinitely surpassing each other, either in magnitude or minuteness, to the great detriment of other sciences; for that doctrine being supposed true, though avowedly unintelligible, it was contended that other doctrines, equally unintelligible and contradictory, should not be rejected merely on that account: this monstrous doctrine was indeed early opposed by Berkeley, Maclaurin, and Jarrige, but Carnot alone has of late clearly exposed its source and origin.

402. The slow progress of natural philosophy and medicine before the age of Boyle
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and Newton, is in great measure imputable to the rash adoption and reliance on hypotheses. Liebnitz assures us, that the attachment of the Carthesian sect to the supposition of subtle, globular, and striated matter, was as strong as to the demonstrated theorems of Euclid.

403. So in theology, the groundless assumption of the absolute perfection of the Masoretic copies of the Old Testament, or *hebræa veritas*, as they affected to call it, for some time obstructed the progress of just critical inquiry into the integrity of the sacred text, and even the improvement of chronology, &c.

404. Thirdly, *maxims generally received, though false or misunderstood*: not to insist on many held in the sixteenth and seventeenth centuries, such as, that *nature abhors a vacuum*; that *elements* (as some bodies were called) *do not gravitate in their proper places*, &c.: some such maxims subsist even at present, such as, that *God created all things for his own glory*, or *to manifest his perfections*; that *nature acts in the simplest manner*; this last is indeed true, but commonly misapplied, as the mode

in which nature *really* acts is often little understood; and that mode which appears to us the simplest upon a superficial view, is frequently found not to be that which nature really follows, which yet, when narrowly examined, is found to be (every thing considered) the simplest, of which chymistry furnishes abundant examples. So also it has been laid down as an incontrovertible truth, that water was an element, and that elements were indecomposable, yet the contrary is now almost generally acknowledged.

405. So also the maxim, that *whatever is natural is invariably the same at all times and places*: which is clearly contradicted by daily experience; for language is certainly natural to man, yet it is prodigiously varied among the various tribes of mankind; so certain moral principles are natural to mankind, yet their application, in many instances, has, through the influence of superstition, or of adventitious opinions, or various other circumstances, widely differed. Who can doubt but the Ammonite mothers tenderly loved their infant children, yet by a barbarous superstition they were led to burn them.

406. So

406. So it has been held, *that diversity of opinions, on any subject, argues the uncertainty or falsehood of all of them*: this undoubtedly is often, but not constantly and invariably true; few men are sufficiently informed, and perhaps fewer sufficiently unprejudiced and unbiassed, to form a just opinion on some subjects; in cases where they may be supposed to be so, if the subject be within the reach of human faculties, a true decision is at last obtained, though its truth may long be resisted: thus though many opinions concerning the causes of lunar eclipses, and the ebbing and flowing of the sea anciently prevailed, yet one of them, viz. that now generally adopted, must have been always true: but this maxim will be more fully considered in the sequel.

407. Fourthly, *false definitions*: such definitions become principles on which many erroneous opinions are founded; thus some ancient philosophers having defined the *soul to be a substance having the power of producing motion*, inferred the loadstone to be animated because it moved iron; and as the earth seems to produce spontaneously all vegetables, it has been held to be animated: so also vegetables

themselves were supposed to possess a particular sort of soul.

408. So Spinoza having defined God to be an infinite substance comprehending all existence, inferred that all other beings, even men and animals, the earth, planets, and stars were mere modifications of the divine substance.

409. So *chance*, which properly denotes an *unknown cause*, or a known cause of an undesigned effect, has by many been taken to denote the *absence of any cause*; and thus it was held that the universe originated from chance, that is, from no cause whatsoever; many even civilized heathen nations imagined it to be a divinity or goddess, which they called *Fortune*.

410. So also *fate*, or *necessity*, or *destiny*, was imagined to denote a real being, to whose decrees even the gods themselves were subjected, and to which all events were ascribed.

411. Fifthly, *ambiguous or equivocal words* *falsely understood*; these abound in every, even living, languages, but it is principally in dead languages that they occasion many mistakes.

I shall here mention three that have various significations

significations in most languages, and that have frequently been misunderstood ; these are *nature*, *reason*, and *law*.

412. First, *nature* : of this word Mr. Boyle has well enumerated the several senses ; first, it is taken for the *world* or the *universe*, as when we say there is no such thing in *nature*.

Secondly, it is taken for *God* the creator of all things, as when it is said that nature has furnished animals with various instincts.

Thirdly, it often denotes the *aggregate of powers*, or particular *constitution* of animal or vegetable bodies, as when it is said that *nature* operates a *cure*, or that it is strong or weak, &c. ; and so it is said, that it is the *nature* of oaks to produce acorns.

Fourthly, the established order and settled course of things is so called, as when it is said that night *naturally* succeeds day, or that miracles surpass the powers of nature : so it is said, that animals *naturally* cherish their young, that bees *naturally* make honey, or that speech is *natural* to man.

Fifthly, it is taken for that disposition or course of things that is independent of human industry, in opposition to that which is arti-

ficial: thus we say, that a cataract is *natural*, but a cascade or water-spout is artificial.

Sixthly, it has been used to denote the early and unimproved state of mankind, in opposition to the more civilized state; men are then said to have existed in the state of *nature*: this was not certainly the state of a savage, though afterwards some men became so from various causes.

Seventhly, it is often employed to denote *sort* or *kind*, as when we say, disputes of this *nature* are not easily settled.

Eighthly, it often denotes the *essence* or *primary specific properties* of things: thus we say, human *nature*, &c. or that the soul is *naturally* immortal.

Ninthly, it is often taken for conformity to truth and reality, as when it is said that the descriptions of poets, or the representations of painters or statuaries, are *natural*.

Tenthly, many of the ancients have deemed nature to be a sort of divinity: thus Pliny gravely says, *naturæ nihil impossibile videtur*; and Ovid attributes to this goddess, goodness superior to that of God, *hanc Deus et melior item natura diremit*. In short, it is used in contradistinction

distinction to education, art, design, chance, or to a miracle.

413. Second, *reason* has also been taken in different senses: I shall here barely notice, that it is often taken, first, for intuitive or demonstrated truth; second, for decisive and convincing arguments; and, third, for high probabilities. What is called corrupt reason, is in fact no reason, but a mere delusion. See post. No. 755.

414. Third, *law* in its primitive sense denotes the command of a superior having power to punish its infraction, and not evidently contrary to that of a still superior power. In a secondary sense, it denotes the constituted order and succession of natural phenomena, abstracting from the great author of that constitution: thus we talk of the laws of gravitation, hydrostatics, refraction, reflexion, chymical affinities, &c; and of natural affections, passions, propensities, &c.

415. However, by a great perversion of language, it has been itself taken for an efficient and operative cause, independent of any intelligent and all-powerful agent, as Mr. Paley justly remarks.

416. Sixthly,

416. Sixthly, *texts falsely interpreted*: this commonly happens by taking in a literal sense what ought to be understood in a figurative sense, or conversely: of such mistakes, of which there are innumerable instances, I shall mention only two, whose absurdity is generally acknowledged. Christ having called Herod a fox, Luke xiii. 32. Some imagined that Herod had at that instant been transformed into a fox.*

So it being said in Genesis, that *God made man after his own image*: the Anthropomorphites interpreting this, and numerous other texts of the same import, literally, concluded that God really had an human form: their arguments are ably and plausibly stated by Burnet, in his *Archæologia*, p. 158.

So also the immobility of the earth, and the motion of the sun, were erroneously deduced from other texts, all of which relate only to *appearances* or vulgar opinion.

417. *That insoluble objections are not a sufficient proof of the falsehood of the opinions against which they militate*: thus some scholastics perceiving the incompatibility of the intuitive

* Leibnitz, vol. i. p. 80, 4to.; and Grotius.

truth of some maxims, with that of notions which they deem grounded on divine revelation, have had the candour to acknowledge this opposition, and the boldness to deny the truth of these maxims, when applied to divine subjects: thus the axiom, *that things identified with a third thing are identified with each other*, upon which the syllogistic art and all reasoning is founded, was denied by the late celebrated professor Tournely,* and others quoted by Mastrius.† Segui endeavours to evade its force by a new and scarcely orthodox distinction.‡ Some Protestant divines of great note assert, that we should believe two propositions that appear incompatible with each other, and judge the reasons that evince their incompatibility to be false, though we should not be able to refute them. See 3 Bayle Posth. works, p. 824; and Arnauld Apolog. des Cathol. vol. ii. p. 55 and 56, there quoted; and Leibn. sur l'Entendment, &c. p. 467, (a posthumous work containing an examination of Locke.) Luther owns, that according to philosophy,

* De Trinitat, p. 18, 24, and 264.

† Log. p. 38.

‡ † Metaphy. 139.

the incarnation is impossible.* See i Leibn. 74 and 77. Yet Aquinas, *prima parte quest. prima art. 8º.* denies that insoluble arguments can be brought against articles of faith; and Tournely's doctrine is denied by the Abp. of Paris, in his Mandment against Rousseau.

418. But to developé this matter more fully it must be remarked, that the insolubility of an objection to any doctrine, may arise either from the incontrovertible truth of such objection, and its evident opposition to the very substance or abstract notion of the tenet against which it is adduced, or from its opposition to our manner of conceiving the application of that doctrine to particular cases. Insoluble objections to the substance of any doctrine, are certainly demonstrative of its falsehood; but such objections to the mode of its application to particular cases are not always conclusive; because this application may be made in a manner, to us inconceivable, being above the reach of our faculties, as will presently be shewn.

* The irreconcilability of faith and reason, is said to have been condemned by Leo X. in the last council of Lateran. i Leibn. 73.

419. Thus

419. Thus the properties of beings are partly *absolute*, and partly *relative*: the absolute are those of the beings themselves abstractedly considered, as *existence, substance, spirituality, unity, necessity, contingency, &c.* Insoluble arguments adduced either for or against any of these, must in the one case necessarily establish them, being demonstrative of their reality; in the other case as necessarily refute and subvert them, being demonstrative of their nullity: thus an insoluble argument against the *existence* of the bad god of Manes, is a demonstration that no such Being exists. So the insoluble arguments adduced by Berkley against the *substantiality* of bodies, are demonstrations that bodies are modes and not substances, &c.

420. But it is otherwise with regard to *relative* properties; namely, those that imply a connexion with, or a relation to, other beings, or even to the modifications of one's own being; such as *power, intelligence, knowledge, wisdom, justice, goodness, &c.*: the *manner* in which these are possessed and exercised by beings of a different order, may be, and in the Supreme Being *must be*, extremely different from

from the imperfect manner in which we possess them, and consequently inconceivable by us:* this is rendered evident by the different modes in which individuals, even of our own species, attain the knowledge of one and the same fact; modes that are absolutely inconceivable by, and above the faculties of those that do not possess both: thus a man *blind* from his nativity, knows the distance of approaching objects, as horses and carriages, by the difference of sound; and a man *deaf* from his nativity, perceives the approach of the same objects by his *sight*: neither can conceive the *manner* in which the other attains that knowledge, yet both possess it, and each is *certain* that the other possesses it.

421. The human species attains knowledge by *sensations*, or *ideas*, or *notions*, or by *reasoning*: all these modes involve some imperfection, therefore the mode in which the Supreme Being possesses all knowledge must be inconceivable by us, and out of the reach of our faculties. Arguments therefore respecting it,

* See 12 Biblioth. Choise, 270; and Descartes, Princip. part 1. sec. 41; and Abp. King on the Origin of Evil, p. 68.

grounded on the measure, mode, and extent of *our* knowledge, may be insoluble, because the mode of knowledge of the Divine Being is unknown, and to us inconceivable: all we know concerning it is, that it exists, since wisdom is found in his works, which could not exist without intelligence; and that whatsoever may be the mode of its existence, it is equivalent and infinitely more than equivalent to ours, as well as more perfect and extensive, than any which created beings can possess, and the same may be said of the other divine attributes; the ways of God may be *inscrutable*, but not indefensible, for they cannot be shewn to be contradictory to the essential notions of justice or goodness, unless every possible mode of exerting them were shewn to be inconsistent, &c.

422. Seventhly, *retorsion* consists in shewing, that the arguments adduced against any opinion, are of equal force against the opinion of those who object to them; this mode of arguing is called *argumentum ad hominem*: it is no proof of the truth of the opinion of him that employs it, for recrimination is not a justification, it is rather of the nature of what lawyers call an *estoppel*.

CHAPTER

CHAPTER VI.

OF PROBABLE PROOFS.

423. As arguments that approach most to demonstrations are productive of certainty, so those that approach to certainty are productive of probability, and the nearer the approach to certainty, the higher is the probability; nay, some probabilities approach so near to certainty, that they can scarce be distinguished from it: thus we are frequently certain, that is, we are convinced of the future existence of objects that nevertheless are not certain. So we all believe, that in our climate the sun shall rise within twenty-four hours; yet we all believe that this world shall have an end, consequently that some day must be the last: it is therefore *only* probable that the sun shall rise to-morrow (if it be permitted so to speak), but the probability is so high, that the least doubt of it is not entertained.

424. The mind may therefore be certain
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of a fact not absolutely certain; hence the scholastics properly distinguished two sorts of certainty; the one, consisting of the exclusion of doubt and residing in the mind, they called *subjective certainty*; the other, denoting the reality of the object, they called *objective certainty*.

425. Probability is also called *verisimilitude*, and justly, for probable frequently signifies a fact conformable or similar to facts already *effayed*, that is, experienced *probata*; and hence this term has been applied to arguments or doctrines conformable to other *known* truths, or in the superior number of possibilities of one set of events, as that a die shall exhibit a number above one: this is a nearer approach to a certainty.

It would be unreasonable to refuse all light because we cannot have that of noonday; though if the light be so weak that we cannot distinguish objects, we should form no judgment concerning them; but moonlight is often sufficient.

426. Probability is either independent or dependent

Independent probability, is that which is grounded on mere experience or observation.

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Dependent,

Dependent, is that which results from a majority of the divisions of a *certainty*: this may be called *casual* probability, and the former *empiric*. The nature of dependent or casual probability may be clearly understood, by considering the event of casting a common die, four of whose faces may be supposed marked with an *ace*, and two only with a duce ; here it is *certain*, in the first place, that some one or other of the six faces of the die will be turned up, though no more than one can be turned up : but, secondly, this certainty is split or divided betwixt the six faces ; for each of them has, as far as we can see, an equal chance of being turned up ; and though unperceived causes certainly interfere in favour of the face that shall be turned up, yet, as we are ignorant which of the faces they will favour, they are not to us as non-existing.

And, thirdly, as four of these faces favour the appearance of an *ace*, and only two that of a duce, it is plain that the appearance of an ace is indicated by a majority of the six divisions of a certainty, and hence we judge it *probable* ; upon the principle that, among causes separately considered as equally powerful,

ful, the determination of the majority of them to produce the same effect, shall be still more powerful, and consequently preferably expected; or in other words most *probable*, yet still not *certain*; for there is a possibility that the unperceived causes of the turning up of a particular face of a die, such as the quantity of motion it receives, the angle or edge which it presents in its fall to the table, &c. may favour the appearance of the face indicated by the *minority* of the faces, and render it victorious over its antagonists.

However it is certain, both with respect to empiric and casual probability, that, on repeated trials, the most probable event will most frequently happen.

427. And for the same reason with regard to past facts, *prima facie*, ascribable to different causes, that particular cause, or combination of causes, must be deemed most probably to have acted, which most of the circumstances preceding, concomitant, or subsequent to the fact concur in pointing out and best agree with it.

428. Thus we see that our opinion of the probability of any *future* fact, is grounded on

our knowledge and comparison of most of the causes (if many,) capable of producing it; or, if these be entirely unknown, on the relation of similitude or analogy of the future to the past, in similar or analogous circumstances.

429. And our opinion of the probability of *past* facts, is founded on the known relation of effects of that sort, to their known causes; or if these be unknown, and the facts known, these are with probability ascribed to such causes, as are commonly known to be connected with them. It is such connection that, independently of testimony, forms the *internal probability* of past facts, or their causes.

430. So the probability or truth of any doctrine, argument, or speculative opinion is derived from its conformity or analogy to ~~some~~ other doctrine of whose truth we are *certain*.—Thus the opinion that the planets are inhabited, is probable, from their similitude in many respects to the earth; but it is not certain, because this opinion might be rendered still more probable, by the actual discovery of the inhabitants; or of their
their

their houses, or by revelation; for there is this difference betwixt the highest probability and certainty, that probability is always susceptible of increase or decrease, whereas well-grounded certainty is capable of neither.

A deficiency therefore of any species of proof which the nature of the case admits of, renders the fact or doctrine, to which it is wanting, barely probable, though every other species of proof should support it. Thus Boerhaave shewed the probability that Mercury was congealable by ~~some~~ ^a high degree of cold; but it was not certain until Gmelin actually found it congealed; and hence our law, which always seeks for certainty, will not allow the copy of a deed to be given in evidence while the original exists.

432. Though all truths are compatible with each other, yet they are not linked with each other in such a manner, as that their connexion can easily be seen, or they may be expressed in terms so general, as to be inconsistent with each other in the whole extent of their generality, and therefore require distinction, and admit exceptions in particular cases.

Thus a proposition, conformable to one truth, may not be so to other truths, which a doctrine may contain: hence the *probability* of a doctrinal proposition, consists in its conformity to some of the truths contained in a subject, and its *certainty* in its conformity with all of them, as in political, legal, moral, and theological subjects.

433. If a certainty be *equally* divided between two or more events, as there is no reason to determine us to think one of them more probable ~~than the~~ other, each of them is reckoned improbable, though one or other of them must happen; and the greater the number of events among which the certainty is equally distributed, the greater the improbability of each of them; not from the opposition of any of them to experience, but because they counterbalance each other in our survey of them; and the impossibility of considering any of them more probable than the other, renders all of them *negatively* probable, from the absence of probability, as opposition to experience renders events in other subjects *positively* improbable
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in our estimation. Thus in a common die, each of whose faces is progressively numbered, the certainty of some or other of them being turned up, is divided between the six faces; the eventuality or chance of the appearance of each of them, is only one sixth of the certainty, and depends on unperceived causes, as already mentioned.

Mr. Hume, indeed, thinks that *chance* properly denotes the negation of any cause; but that an event should happen without any cause, appears to me; and to the rest of mankind, perfectly impossible. He grounds this assertion on the observation, that chance leaves the mind perfectly indifferent; either to consider the existence or non-existence of the object, regarded as contingent;* whereas this indifference evidently arises from the known equality of the causes that lead to different events, and ignorance of the circumstances leading to the effect of some one of them, which must destroy the apprehended equilibrium. Thus we know that there are on one common die, six sides, on each of which,

* Treatise on Human Nature, vol. i. p. 221.

after projection, it is capable of resting, and of thus presenting a different face; but of the circumstances that determine it to rest on one face rather than on another, we are ignorant and consequently we are left in a state of indifference, or rather of indecision. He adds, "that since an entire indifference is essential to chance, no one chance can possibly be superior to another, otherwise than as it is composed of a *superior number* of chances." It is strange he did not perceive the absurdity of superior number of *nothings*.

434. The assent or credit given to facts or arguments deemed probable, or presumed to be true, is called *belief*, or *simple belief*, *opinion*, or *persuasion*; it is always accompanied with a degree of assurance or confidence, commensurate with the apprehended probability of the fact or point exhibited to the mind; but the term belief is variously applied, as will presently be seen.

435. As *certainty* is attained by proofs partly *direct*, and partly *indirect*, (No. 339, and 340,) so also is opinion or belief, which is only a more or less distant approximation to certainty.

437. *Direct*

436. *Direct* proofs are such as directly evince the agreement of the point in question with other truths relative to the subject, as already said, No. 348, 349, 350.

437. *Indirect* proofs are such as are extrinsic to the fact, yet tending to corroborate or establish its probability, such as *testimony*; and with respect to doctrines, *authority*; both indeed, inferior to such as produce certainty, of which I have treated, No. 346, &c.; yet still sufficiently strong to inspire credit, and therefore called *credible*, or *respectable* (and not probable, for this term is more properly applied to the facts attested, than to the testimony itself.)

438. The credibility of the testimony productive of probability, rests on nearly the same characteristic circumstances, as those that produce certainty, but either less numerous, or less forcible, or less clearly discerned, or combated by contradictory testimony, or resisted or counterbalanced by opposite internal evidence; all these incidents varying in degree, necessarily generate various degrees of credit, and hence the discordant judgments of mankind, on subjects susceptible only of probability;

probability; but before I detail more fully the characters necessary to bestow on testimony any degree of credit, it is proper to explain some obscure or ambiguous phrases that are commonly employed in treating of it.

439. *Belief*: this term is frequently used in a vague and general sense, to express our assent to any information, whether this assent be strong or weak, whether founded on the most convincing or the most trivial proofs. Thus we say, *we believe our senses, we believe the scriptures, we believe a witness, or common report*; some *believe* the propositions of Euclid to be true, on finding them demonstrated, others *believe* them to be true merely on testimony; thus we see this term employed indiscriminately to denote assent, grounded on metaphysical evidence or assent, accompanied with certainty, or assent to mere probability, or perhaps arising from the influence of our passions; yet no one will say *he believes snow to be white*.

440. To prevent this ambiguity, I would willingly denote, by *mere belief*, an assent to probability: it is only in this sense it is taken by Locke, B. 4. Chap. xv.; and in our law;
noting

noting however that there are various degrees of probability; the higher, approaching to certainty, induce a *firmer* belief, the lower, an *inclination to believe*, and the lowest, a bare *suspicion*. See Post, No. 675.

441. To *believe in*, signifies to assent with the utmost confidence to the authority of any person, or to any doctrine. So we *believe in God*, or we *believe in the doctrines of Christianity*; so, for many ages, philosophers believed in Aristotle.

442. Again, we say *we are certain* of propositions that are intuitively evident, and also of facts or propositions of which we are fully convinced, though not evident; but of facts or propositions which we deem only probable, we say we are *persuaded*, we *believe*, we *conjecture*, we *think*, or we are *inclined to think*; we have no single verb denoting that we are certain, and therefore are here also obliged to use the word *believe*.

443. *Belief*, derived from the circumstances mentioned No. 347, 348, 349, previous to any testimony relative to, or grounded on, respectable authority, is also called a *presumption*. (See its definition, 1 Lofft, 303, and good

good examples, 2 Lofft, 898, and Peake, 21, 22, 2 M'Nally, 577.)

444. Presumptions are either *slight*, *strong*, or *violent*.

Slight, * as when a man is presumed to be the writer of a paper, written in a hand that slightly resembles his. *Strong*, when on a comparison of both writings, by persons unacquainted with his hand, and who never saw him write, it is inferred to be his hand, from its similitude to a writing really his. This is admitted as a proof in civil cases, but not in criminal, (Lofft's edition of Gilbert's Law of Evidence, vol. i. p. 53, 54.) Yet Buller, (in Trials at the Old Baily, vol. i. p. 232, †) denies that any difference should be made between that which is legal proof in a civil action, and that which should be received as such, in a criminal prosecution: but the presumption is said to be *violent*, when a writing is ascribed to a man, by persons who swear themselves acquainted with his hand,

* See Peake's cases at *Nisi Prius*, 20, and his law of evidence, p. 102.

† Yet is not a Quaker's affirmation good evidence in civil cases, though not in criminal.

and

and without requiring any comparison swear the writing to be his, and who have seen him write. The proof from the *similitude* of hands rests on this fallacious maxim, that similar effects must proceed from one and the *same cause*; whereas the maxim is, that similar effects proceed from similar causes, (See Newton.) It is true that it *rarely* happens that two men should write exactly in the same manner; it is therefore *probable*, that similar writings proceed from the same person. (See 1 Lofft's Gilbert, p. 53.) So a receipt of the last rent forms a violent presumption, that the former rent was paid: this presumption is founded on the experienced order in which such events succeed each other. So if a man is found dead in a room, and another is seen running out of it with a bloody sword, (2 Hawk. P. C. 618,) this is grounded on the relation of cause and effect; yet, in my opinion, other circumstances should concur; for the cause, abstractedly taken, is ambiguous; for it might be that he was running for a surgeon, for a man guilty of suicide, before death ensued.

Per Holt, a violent presumption of a man's
having

having done a fact, must be when a fact is done, and no other can be thought of to have done it; and this evidence is a strong proof: a *probable* presumption is no proof to rely on, unless added to a positive proof by witnesses; (3 Cases in Chancery, 105.) The *fact to ground* the presumption must be proved, *belicf* can never be received to ground a presumption. (2 M^cNally, 416.)

SECTION II.

OF THE INDIRECT PROOFS OF PROBABILITY.

These we have already said to be credible testimony and authority.

First, of the qualification or disqualifications affecting the credibility of a witness.

445. The circumstances or qualifications relative to a witness, and which constitute what is called his credibility, (as the want of them in any considerable degree do his disability.) are, First, *sufficient knowledge* of the fact attested; Secondly, *disinterestedness*;
Thirdly,

Thirdly, *integrity*; Fourthly, *veracity*; and, Lastly, whose testification is given under *sanction of such an oath* as the witness deems obligatory: these constitute what is called his credibility. In some cases the presence of some of these circumstances, if *not known*, may be presumed, especially where the sanction of an oath intervenes, by the persons who receive the testimony; in other cases it should be proved. The obvious defect of these qualifications in a witness, renders him *incompetent*, and the knowledge that the witness is possessed of them, evidently increases his credibility; how these principles are applied by our law, will hereafter be seen.

446. First, *sufficient knowledge*, power, and attention to observe the fact attested, and also that degree of acquaintance with the consequences of his testimony as may render him more circumspect; hence the testimony of young children, or idiots, or drunken persons, should not be received, nor that of persons incapable of clearly explaining themselves; nor is the testimony of persons under the influence of passions so violent, as to induce them to fancy they see or perceive things in

a point of view naturally suggested by such passions, worthy of much credit; nor that of enthusiasts, fanatics, or outrageous bigots; nor should the testimony relative to minute circumstances of facts so long past, that the memory of them may be suspected to waver, be much insisted upon. Hence also a testimony can only be had of facts, that are objects of sense, and have been actually observed by the witness; hence hear-say testimony is in general rejected by our law, though there are some exceptions, and moreover the real and original witness in such cases is not sworn.

447. Secondly, *disinterestedness*. This quality is of great extent; for it comprehends not only an exemption of all fear of loss or damage, in consequence of the testimony and the absence of all pecuniary interest, whether of the witness or of his connexions, but also of the gratification of his or their passions, or of those of his sect or party, more especially in periods when party zeal is strongly prevalent; yet there are many, who, from their situation in life, and known rectitude of character, cannot be suspected of receiving an undue
 bias

bias from small pecuniary considerations involved in the consequences of their testimony, nor even from the interest of a party; hence the existence of this qualification is more or less important, according to the credibility of the witness, according to the general estimation in which his character is held.

448. Hence also if the interest of the witness or of his connexions be not only not promoted, but on the contrary injured by the obvious consequences of his testimony, his assertion, if there be no other exception to it, deserves the highest credit.

449. Thirdly, *integrity*: this quality when its existence is well established, affords the firmest assurance of a true testimony in all matters of importance, as it is inconsistent with the influence of any undue motives, as well as with a conscious ignorance of the matter attested.

450. Lastly, *veracity*, or an experienced disposition to strict adherence to truth. This in serious matters, is often further fortified by the sanction of an oath, and a dread of the penalties consequent on perjury; but it is well known, that oaths are of little use where integrity, or a sense of religion is wanting,

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especially in cases, wherein the practice of disregarding or evading them has been long introduced, as in what is called Custom-house oaths. In common cases, love of the marvellous, or of a jest frequently prevails over this disposition, and in many persons habits of a contrary nature are firmly established. Yet so natural is this disposition to truth, that there are few that may not be credited in common cases, where no motive of deviating from it appears.

Our knowledge of the *veracity* and the other qualifications of witnesses, is generally acquired by experience, or inferred from their approved conduct and general character, and often from their station in life.*

451. The next indirect source of probability, is *authority*; and this is either regular or irregular.

452. By regular authority I mean, that to which it is reasonable that others should submit in doubtful cases, and also in cases where the opinion proposed by authority being probable, is not opposed by an opinion apparently still

* Lord Camden's Argument in *Hindson and Uxor, v. Kersey*, and *1 Lofft*, 296.

more probable. Thus the opinions of men eminent for their skill in any art or science, afford an indirect proof in cases in which, through ignorance, no probable opinion could otherwise be formed; and also frequently adds a decisive weight to opinions, otherwise known to be probable, and not opposed to opinions apparently still more probable, or by an equal authority. Thus whether a wound be mortal or not, must be decided by the authority of surgeons, unless contradicted by other surgeons: whether a person was poisoned, must be decided by physicians: but if the former should decide that a scratch was a mortal wound, or the latter, that a person could be poisoned by incantations, or medicated smells, their decisions should not be regarded.

453. Facts apparently intrinsically improbable, and even really so in common and known circumstances, may yet be proved to be certain in new or previously unexperienced circumstances. Thus, nothing can be supposed more improbable or less expected, than that a man should be frozen to death though exposed to the sun on a summer's day; or that one liquor should be set in a blaze on

the coldest winter's day, by mere mixture with another liquor equally cold; or that spirit of wine should be set on fire by the approach of a piece of ice. Yet, all these facts, and many more equally strange, are *certain*, and therefore may be credited on respectable authority, when alleged to happen in circumstances unknown to, and consequently not contradicted by the experience of those who are required to credit them.

454. The confidence which we may have in the various species of authority, has been shewn, No. 363, &c. and 380, &c.

455. By irregular authority, I mean that of *common fame*; that is an account or opinion of some event or other object, generally current in some town, district, or country, whose origin or progress has not, or cannot be accurately ascertained, or when it relates to the character and conduct of individuals, and being uncontaminated by malignity or party prejudice, is the result of general observation.

456. The credibility of common fame, like that of every other testimony, varies with, and is affected by the causes that gave birth to it. Sometimes it originates in superstition or
bigotry,

bigotry, love of the marvellous, envy, partiality to one's own country, or party civil or religious, or hatred or contempt for other countries, or of the opposite parties. In such cases, it is plain it deserves to be rejected with either pity or indignation; pity when attributable to ignorance, and indignation when fomented by malignity.

457. But when no sinister motive can be assigned to its origin and progress, and the fact to which it relates is probable, and of recent date, and the person, whose reputation it constitutes, resides among those among whom it exists, and his known conduct conformable thereto, it constitutes a high degree of probability. Some facts are of publick notoriety, as whether we are in war or peace: these are indeed triable by jury, but require no other evidence. Foster's Discourse on Treason, cap. 2. sec. 12. The internal probability or improbability of a fact, should always outweigh common fame.

458. When even the reports of any particular event, are not only headless, but vague or inconsistent, yet if they do not evidently arise from some suspicious motives, they

should neither be absolutely discredited nor implicitly believed: on the contrary, if the facts be of any importance, they deserve attention, and form a sufficient inducement to institute a strict inquiry.

459. Having thus discussed the indirect sources of probability arising from the testimony of witnesses, whose credibility is duly ascertained, it might be expected, that the effects of concurrent, successive, and contradictory testimonies, should next be explained; but as these effects will more clearly be understood, after the consideration of the effects of testimony, applied to objects differently connected with our experience, and also after explaining the application of calculation to the different degrees of probability and credibility, this subject is reserved for a subsequent section.

SECTION III.

● OF THE CREDIBILITY OF TESTIMONY WHEN GIVEN TO
FACTS MORE OR LESS CONFORMABLE WITH, OR AD-
VERSE TO EXPERIENCE.

460. I must here premise that by *our experience*, I understand not solely our personal and individual experience or observation, which, in the greater part of mankind, are necessarily confined within very narrow limits, but also that mass of adventitious knowledge, derived from the general and uniform experience of all ages and countries; which being conveyed to us by multiplied and uncontradicted testimony, and harmonizing with our own personal experience, as far as this extends, assimilates with it, and is relied upon with the same degree of confidence as we repose in that, which is in the strictest sense our own.

461. Thus, those who have never seen a dying or dead man, are nevertheless as fully
R 4 convinced,

convinced, by mere testimony, of the mortality of mankind, as those who have seen thousands expiring or deprived of life.

462. To estimate the credibility of a testimony applied to objects or events more or less conformable to their internal probability or certainty in given circumstances, I must, in the first place, lay it down as an indisputable truth, that the credit of a single witness, however apparently qualified, may be diminished and even annihilated by the improbability of the fact or object he vouches; at least when both the fact and testimony are unattended with the circumstances that should naturally accompany them, or result from them: and the reason is, that the improbability of the fact often arising from its opposition to a truth universally received and acknowledged, the qualifications forming the credibility of the witness who contests it, can seldom be so clearly discerned, nor consequently can the truth of his attestation be rendered so apparent of the truth of the fact he attests; besides internal probability is founded on preceding general testimony.

463. Thus if any one should tell me, he
had

had met with a man somewhat above six feet high in this town, I should readily believe him; but should he tell me he met with a man sixty feet high, I should as certainly disbelieve him, let his credibility be apparently ever so well established; the former fact not being unusual, and the latter in the highest degree extraordinary. So extraordinary indeed, that the supposition of its attestation by any highly credible witness, should not be admitted, if stated singly, and divested of corroborating circumstances.

464. Hence the nature of the several facts offered to our consideration, viewed as connected with their several circumstances, in the relation in which they stand to our experience, whether personal or adscititious (which relation constitutes what is called their *internal probability* or improbability,) must first be distinguished and examined, before we can ascertain the alteration which an affirmative or negative testimony, of any kind, can make in their credibility.

The probability of an attested fact or testimony, is directly as its internal probability, and the credibility of the person who attests it.

Facts

Facts considered relatively to past experience, may be reduced to the following classes.

465. First, *certain*, are those that are already known to exist, or to have existed, or that in future must exist in given circumstances, agreeably to general, universal, constant, and unvaried experience, or undoubted testimony, as those that result from the laws of motion, gravitation, liquidity, optics, the mortality of all known animals, &c.; yet the results of these laws can with certainty be inferred only in cases and circumstances, in which, by previous experience, they were heretofore observed to take place; in particular instances and in absolutely new circumstances, events otherwise to be expected, are reducible to the fourth class. Thus iron is raised, contrary to the law of gravitation, by a magnet, dead animals are made to move by galvanism, gold and most metals are dissolved by mercury, &c.

466. Secondly, *probable*, those which are similar to such as happen much oftener than they fail; and of which our assurance of their having happened, and of their future happening, is proportioned to the excess of the number
ber

ber of times they have, in fundry trials, happened, over the number of times they have failed, in fimilar or analogous circumstances. Thus it is much more probable, that a healthy child shall live six years, than that he shall die before that age; but if he be sickly, or if a contagious disorder prevails, &c. the probability is much altered. It is more probable that on a common die, some number higher than an ace shall be thrown; it is otherwise, if the die be loaded on the side opposite the ace. If the mercury in the barometer rises above the height suited to the elevation of its situation over the level of the sea, there is a probability of fair weather, &c. &c.

The scale of probability is very extensive; it is in the highest degree probable, that a healthy man of thirty years of age shall live another day, less probable that he shall live another year, and still less probable that he shall live ten years longer. The internal probability of facts of ancient date, is grounded on their similitude or analogy to modern facts of the same nature.

467. Thirdly, *equicafual*, by some called
indifferent

indifferent events: these are such, with regard to which our experience is, as it were, *indifferent*, as they have as often happened as failed, and failed as happened.

Thus on projecting a die, whether a number higher than a tray shall be turned up, is equicalual, as there are three faces indicating higher numbers, and three indicating numbers lower than a four; whether on the fall of a piece of money, a head shall appear; whether a man has made a will or died intestate, &c.

468. Fourthly, *neutral*; that is, neither agreeing with, nor disagreeing from general experience. Of this class were all new facts previous to their discovery; as the existence of America; of various islands in the Southern ocean; of various semi-metals; the powers of gunpowder, of various menstrooms and other chymical products, as phosphori, &c.; telescopes, microscopes, &c.; electrical, magnetic, and galvanic properties, &c.: most of these powers, it is to be remarked, are exceptions, in particular cases, to general experience, in common circumstances; but since such facts have been ascertained, similar facts have attained a share, though a low share, of probability. Thus it

is now probable, that there are still some islands, as yet undiscovered, in the unexplored tracts of the ocean; that there are still some undiscovered semi-metals, and that there are still some as yet unknown powers in nature. And of this kind are the various powers of insects or worms, far disagreeing indeed with the powers of other animals, to which they bear but a slight analogy: their properties should therefore excite less wonder than they have done, having been, before the last century, as little explored as the islands in the Southern ocean. Such are for instance the multiplication of polypi by dissection, the metamorphoses of caterpillars, &c.

469. Fifthly, *improbable*, of which there are the following species.

470. First, *any determinate event among numerous, equally possible*; as what particular face of a die shall, after projection, be turned up. It is evident that this improbability does not proceed from experience, but merely from the equal claim of each of the faces to our expectation, as has been shewn, No. 426 and 433. And consequently the more numerous such events are, as in a lottery, consisting of

20,000

20,000 or 50,000, &c. tickets, the less probable will be the drawing of any particular number.

471. Secondly, *the extraordinary*, that in the common course of nature have indeed happened, but rarely and only among large masses of mankind, such as the birth of *twins* of the human species; they are therefore exceptions, but well-known exceptions, or at least analogous to such exceptions of the commonly experienced course of nature. Such exceptions are improbable in different degrees, according to their greater or lesser frequency; of these, the most rare in animal and vegetable nature, are called *preternatural*, such as *monsters*.

472. Where no known course of nature is established by experience, (as it is well known to be in animal and vegetable nature,) any new natural event is esteemed a *prodigy*, until it has been frequently repeated, as *earthquakes* and *volcanoes*: these, in countries where they have been long experienced, though they rarely happen, are scarcely deemed extraordinary; such at least is the case of ejections from known volcanoes, as
Ætna

Ætna and Vesuvius; nay, their cessation for an unusual period would be deemed extraordinary; but such events, in countries where they have not as yet happened, would be deemed extraordinary, and highly improbable.

473. In moral nature, unusual instances, either of virtue or excesses of vice, are improbable, though in different degrees, according to the circumstances, education, laws, and habits of different nations. So also are extraordinary exertions of fortitude, as those exhibited by the American savages; and of superstition, as that of mothers sacrificing their children to Moloch; and of false honour, as that of the Bramin women; all of which would appear improbable, if some equally absurd practices, as sacrifices to general opinions, had not daily prevailed among ourselves.

474. Thirdly, *the extravagant*; that is, those that lie far beyond the known limits of animal or vegetable powers. Such as the change of different species of known vegetables into each other; the age of man having, in any instance within these last 4000 years, been
extended

extended to 200 years; or of any man's having attained the height of twenty feet, &c. no instance of such events having been known or well attested.

475. Fourthly, *the unnatural*; such as facts contrary to our natural instincts: such as the hatred of parents to their children, or of children to their parents, and other unnatural excesses. These instances, except in maddening extremities, such as induced mothers even to devour their infants, are comparatively few. The destruction of parents in old age, among savage tribes, resulted not from hatred, but to save them from evils, which they judge still greater, and was frequently, if not always, demanded by the parents themselves. Infanticide among the Chinese, resulted from the apprehended impossibility of maintaining them.

476. Fifthly, *the supernatural*; these are events, which are totally unconnected with corporeal nature, and therefore cannot be said to agree, or disagree with its laws. Of this sort, are the apparition of angels, prophetic visions, ecstatic perceptions, and inspiration, frequently mentioned in holy writ.

477. The

477. The internal probability of such events, cannot therefore be deduced from experience, which is merely conversant with events of a corporeal nature, but must be deduced partly from moral considerations, such as their suitability to the moral attributes of the great Author of nature, and partly from their connexion with subsequent natural events, of which we have a moral certainty; thus the reality of the supernatural information of Daniel, was evidently proved by the completion of his prophecies.

478. Sixthly, *miraculous* events are such as are effected by means, which universal and uniform experience has shewn to be naturally inadequate to their production,* and therefore in the highest degree improbable. They differ from extraordinary events, such as those resulting from the previously unsuspected powers of magnetism, electricity, galvanism, &c. inasmuch as these take place in previously untried circumstances; whereas, miracles are supposed to take place, by means whose inefficacy had before and

* Austin agrees with me in this definition. See Tournely de Incar. p. 206.

since been fully ascertained; but though they are repugnant to the well-known laws of nature, yet they are evidently possible to the great Author of nature; and an undeniable instance of the exertion of such power, once at least since the creation of this globe, may be deduced from the traces of the deluge, apparent in most mountains, independently of all testimony.

479. Seventhly, the *absurd*, namely those fictitious events, which suppose the existence of order or regularity, without the intervention of any cause to effect the production of either; thus if we should see a die, in numerous trials, constantly turning up the same face, (suppose an ace,) could we doubt that there was not in its interior, some particular cause that gave it that bias. If we had seen that face turned up three times successively, we should begin to suspect the existence of such a cause; if four times, our suspicion would be stronger; if five times, we should think it highly probable; if six times, we should deem it still more probable; and if still oftener, absolutely certain.

It has been proved by Bernouilli, *ars conjectandi*,

tandi, that if the drawing of lottery tickets were continued to infinity, the same numbers would appear on an equal number of times. (Lambert, 113. See also p. 114, 115.)

480. Thus in philosophical experiments, if we observe the same result in ten different trials made in the same circumstances, we entertain no doubt but this result proceeds, not from any accidental, but from a permanent cause. And the reason is, that accidental causes being essentially variable, must in numerous trials, if they alone interfere, produce effects equally variable; for the same reason that permanent causes, acting alone, must produce permanently similar effects.

481. I may be told that the chance of throwing an ace a second time immediately, is exactly the same as that of throwing it the first time, and that the past cast has no influence on the succeeding. All this I acknowledge, but I affirm, that the reiterated appearance of the same face, not only a second time, which may be fortuitous, but a third, a fourth, and a fifth time, &c. without interruption, clearly indicates the agency of a permanent cause, and banishes all suspicion of chance.

482. And here I am compelled to notice some assertions of a late highly respected writer,* which appear to me unreasonable. He tells us that he thinks it possible that the tickets of a lottery consisting of 50,000 numbers may be drawn in their numeral order, as 1, 2, 3, 4, &c., a supposition that to me appears absurd, as it implies that of blind causes acting in a regular manner; as well might he suppose that Virgil's *Æneid* might be produced, by gradually taking the letters that compose it, out of an unseen heap, in which they were all confusedly mixed; or, as a judicious critick has well observed, that a thousand aces may be cast from a bag containing a thousand dice;† and yet the chance of an ace on each die, is the same as that of any other face, but the *agreement* of all of them, in exhibiting the same face, cannot be attributed to chance, nor consequently be supposed.

According to Dr. Price, any series is as improbable as the orderly series; this I take to

* Price, *Dissert.* 3d edition, p. 424.

† XXX vol. *Monthly Review Enlarged*, 6. See also *Rei*, 4to. 624, and *Mem. Berlin*, 1767, p. 386.

be a mistake, for of the orderly sequences, few are possible, but of the disorderly, the sequences are innumerable. By *orderly*, I mean those that have a connexion with each other, as 6, 7, 8, &c.; for 6 presupposes 5, 7 presupposes 6, and 8 presupposes 7, &c. as immediately preceding it. *Order* supposes a continued uninterrupted relation of the, same kind, each number exceeding the preceding by an unit.

483. Secondly, he asserts, that drawing a lottery in any particular assigned manner, is equally improbable: it undoubtedly is so, if the manner was *previously* assigned, for that would argue a connexion between our conceptions, and the series of the numbers exhibited; a connexion which is not only improbable, but impossible, if other means of producing it be not employed, besides blind chance.

484. Thirdly, he thinks it possible that the number first drawn in a lottery, may be guessed; and this, though highly improbable, I believe, may chance to happen, just as dreams are sometimes verified. There is no absurdity in supposing a coincidence in a

single instance, though there is in supposing a train of such coincidences.

485. *Mixed*: these are such as present a complication of acts of different degrees of probability; thus a bequest of a man's estate to his children, implies, first, an *indifferent* act, namely, his making a bequest, but that this bequest should be in favour of his children, is a *probable* event; so that he should bequeath his estate to his known enemy, involves an indifferent and an improbable fact. Such distinctions should carefully be attended to.

486. From what has been observed concerning the qualifications of a witness, from No. 445 to No. 450, we may conclude that they may all be reduced to *integrity* and *knowledge*; for integrity comprehends both veracity and disinterestedness, or at least disregard of any influence proceeding from any resulting interest of any sort.

487. Secondly, as our knowledge of the presence or absence of these qualifications is more or less perfect, witnesses may be considered as *credible* in various degrees, or *doubtful*, to supply, as much as possible, any deficiency

ciency in the former, and remedy, as much as possible, the uncertain credibility of the latter. Courts of justice superadded the sanction of an oath; unhappily, in many cases, a weak substitute. Q. the propriety of affording equal credit to the affidavits of known and unknown persons? the testimony of persons, evidently defective in any of these qualifications, being unworthy of belief deserves no notice: these considerations being premised, I say,

488. A *certain* fact is no way affected by any affirmative testimony; that is, no testimony can *now* increase the certainty we already have of its existence, though this certainty was originally derived from testimony. Thus the testimony of a thousand travellers does not increase the assurance we already have of the existence of Paris, Rome, or Madrid, &c.

489. Neither is the moral certainty of an event or object, when duly obtained, altered by the *denial* of a witness of the highest credibility, for the period during which we have that certainty of its existence (if such a case can be supposed;) thus no testimony can

so, the testimony of *any credible witness*, to their having happened or failed in any particular instance, is sufficient to establish the belief of either ; their probability is just equal to the credibility of the attesting witness ; but if denied by such a witness, they become improbable. No. 570, 571.

494. But the testimony of a *doubtful witness* is of no effect, as already observed. No. 492, and Post. 564, 565.

Of Neutral Facts.

495. These form a middle class between the improbable and the probable ; if the neutral fact derives no support from either experience or analogy, it cannot be deemed probable in any degree ; but as it contradicts no experience, it cannot be deemed improbable ; hence it can be rendered probable, only by the testimony of a witness of *high credibility*.

496. If its existence be denied by a witness of *high credibility*, after repeated trials in circumstances adequate to its discovery, it becomes improbable, such as the existence of
some

some island in a given latitude and longitude.

497. If it bears any analogy to facts already known, it possesses a share of internal probability, proportionable to that analogy, and may be believed on the testimony of a credible witness; thus the congelation of mercury was credited on the attestation of Gmelin, and the identity of lightning and electricity on the testimony of Franklin. Yet if the existence of such facts be denied by a witness still more credible, and on sufficient grounds, it becomes at least doubtful; if it bears no analogy to any known fact, and has eluded repeated trials, (as the transmutation of metals,) it must be deemed improbable.

Of Improbable Facts.

498. Under this head I comprehend, not only positive facts, but also the *failures* of probable facts.

499. And here we must recur to the distinction already noticed, (No. 426, and 433,) betwixt *casual* improbability, and improbability

lity grounded on a deviation from experience, which I therefore call *empiric*.

Of Casual Improbabilities.

500. The drawing of any particular number in a lottery, is as improbable as the drawing of any other; yet, as it is certain that some number must be drawn, the testimony of any *credible* witness, that it was drawn or not drawn, is sufficient to render it probable, that it was or was not, and establish such belief. It is in reality an indifferent fact.

Of Extraordinary, Extravagant, and Unnatural Facts.

501. If such facts be vouched by a witness, whose credibility is barely *equal* to the improbability of those facts, they become *doubtful*, as the opposite probabilities counterbalance each other. Post. No. 574.

502. If vouched by a witness, whose credibility is *inferior* to the improbability of the facts, this is indeed lessened, but not destroyed. Post. No. 576.

503. But

503. But if facts of this nature are vouched by a witness whose credibility is *greater* than the improbability of the fact attested, they then become probable, or at least less improbable in proportion to the credibility of the witness. Doubtful testimony, neither increases nor diminishes its improbability.

504. If facts of this nature are *denied* by persons deserving *any credit*, they become still less probable, and *a fortiori* if denied by persons of high credibility.

Supernatural Facts.

505. Events of this nature, abstractedly considered, and attested only by the person who affirms he has experienced or observed them, cannot be rendered probable by his attestation, however credible, in vouching events naturally possible; unless it be *certain* that he was endowed with supernatural powers. Thus the visions of St. Paul, when elevated to the third heaven, though unconnected with any other events, yet may be considered as *certain*, from the certainty of his possessing supernatural powers.

506. But

506. But the visions of Mahomet, from the certainty of his being wholly devoid of such powers, are utterly improbable; nay, men of the most eminent piety may have their imagination so heated by long continued contemplation, as to present to them various illusions which they deem realities, and attest with the greatest sincerity, and full persuasion of their truth. The desire of promoting some good end, or at least deemed such, has frequently occasioned the attestation of such facts, by persons otherwise of unexceptionable characters.

507. But if such facts be rendered probable from moral considerations, and their connexion with other facts, of which no doubt can be entertained, they may be rendered *certain* by the attestation of any credible witness.

Of Miraculous Facts.

508. These facts, being contradictory to laws grounded on general, universal, and otherwise uniform experience, cannot be proved by any attestation less than that, whose
falsehood

falsehood would be no less miraculous, or in other words a *moral miracle*. No agent, whether natural or supernatural, can produce a moral miracle, therefore, a falsehood which would imply a miracle of this sort, is absolutely impossible; whereas a physical miracle, or the violation of the laws of corporeal nature in some, or indeed in any instance, is evidently possible to the great Author of nature, and therefore, in such cases commands our belief. What that testimony is, whose falsehood should be deemed miraculous, has been explained, No. 357—361.

Of Absurd Facts.

509. These being metaphysically impossible can be proved by no testimony whatsoever, being supposed to have proceeded from blind chance.

Of Mixed Facts.

510. These must be proved by a witness, whose credibility is superior to the improbability of the facts alleged.

SECTION

SECTION IV.

SOME OBJECTIONS TO THE FOREGOING ASSERTIONS
ANSWERED.

511. First, it has been insisted upon, that regard to testimony, is not owing solely to experience.* Certainly in childhood it is not, nor even in weak men, though advanced in years; but certainly it is among the more rational part of mankind, except in trivial matters; for instance, what road leads to such a place, the name of the witnesses, &c.; and even in such cases, before we acquire some experience of the usual veracity of unknown witnesses, their information produces rather a suspicion than belief. But in serious matters, rational men give no credit to unknown persons. See Dr. Young's Essay on the force of testimony, vol. vii. Mem. Roy. Irish Acad. p. 96, and 99.

512. Secondly, it has been said, that "a
" miracle is more properly an event, *different*

* Price, Differt. 3d. ed. p. 398.

from:

“ from experience, than *contrary* to it; and
 “ were I to see a tempest instantaneously
 “ calmed by the word of a man, all my past
 “ experience would remain the same.—I
 “ could only say that I saw, what I never
 “ before had any experience of.” Yes I could
 say that to happen, which was contrary to,
 or rather contradicted, all that I and every
 other man ever before experienced, and which,
 if any certainty can be derived from experi-
 ence, I was certain could never happen.
 Past experience informed me, that the voice
 of a man is incapable of stilling a storm, but
 if my senses inform me that on a particular
 occasion, the word of a man was capable of
 calming a tempest, is not this a contradiction
 to all my past experience? it is as much so as
 any subsequent fact can be to preceding facts;
 were the sun to rise to-morrow in the west,
 would not this contradict all past experience?
 It is added, that “ past experience is merely
 “ *negative*.” It must be so, to be contradicted
 by a *positive* fact. Dr. Franklin’s experiment
 of stilling waves by oil, is a fact differing from
 experience, but, not contrary to it, as it had

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not

not before been tried, and consequently not miraculous.

513. Thirdly, it is asserted, that " all common facts are improbable, independently of testimony." Yet do I require any testimony to prove, that stones projected upwards, have fallen 2000 years ago as they do now? the only instances mentioned, relate to particular contingent facts, whereas the question here relates to general facts, ascertained by universal and uniform experience; contingent facts, unsupported by testimony, are merely fictitious; this is the true reason of their improbability.

514. Fourthly, to prove the falsehood of the principle laid down, No. 502, namely, that no testimony should engage our belief, unless the improbability of its falsehood is greater than that of the event attested,* the following supposition is made.†

" The end of a newspaper confines it in great measure to the relation of such facts as are uncommon. Suppose that it relates truth

* Price, Differt. 3d. edit. p. 405.

† Ibid. p. 409.

only twice in three times, and that there are *nine* such uncommon facts reported by it, as that a certain person is alive in his hundredth year; that another was struck dead by lightning, or that a woman has been delivered of three children at a birth; would it be right to reject all these facts, because more extraordinary than the falsehood of the newspapers? to say this, would be to say, that what by supposition reports truth six times in nine, does not report truth once in nine times."

515. This difficulty, which seems so plausible, is easily removed: in the first place it is denied that the end of a newspaper confines it in great measure to uncommon facts; on the contrary, these seldom occur in it, and even nine such facts as are abovementioned, would not fill half a column. Therefore, if a newspaper is known to report truly twice in three times, this observation relates chiefly to reports of common facts, and these are not improbable, otherwise they could not be called common; even with respect to these, the credibility of the newspaper rates very low, being only 0.666, while certainty is denoted

by one, whereas the least improbable facts cannot be rated higher than 0.499, &c.

516. Secondly, that the credibility of a newspaper cannot be the same with respect to common and uncommon facts, is evident from the credit given to ancient historians, when they relate common facts, and its refusal, when they relate uncommon facts: and lately in the case of Admiral Byron, every one believed the common nautical facts he attested, but few believed his account of the size of the Patagonians. So if a newspaper reports common facts truly, only twice in three times, its credibility must be much lower, when it relates uncommon facts.

517. Thirdly, supposing its credibility even in reporting uncommon facts, to be as two to three. Yet this measure must be applied to each uncommon fact, and not to the nine taken together, as is evident, for it must be so applied even to one *single* fact of that kind, if only one is reported: this entirely destroys the author's supposition.

518. Fourthly, the facts alleged by the author, are not all equally improbable; thus that some particular unknown man is now
alive

alive in his hundredth year, though not common in small masses of mankind, is not uncommon among large masses; for, by the bills of mortality in London, it appears that one man in 20,000 attains that age; and as London contains 900,000 inhabitants, there are among them forty-five that attain that age. If the newswriter should report, that there was now living, a man that attained his *four hundredth* year, would any one believe it? Therefore credit is always given or refused, according to the probability or improbability, or indifference of the fact reported, by all cautious and rational men.

519 and 520. The principle laid down No. 503, namely that the assertion of a doubtful witness does not alter the improbability of the fact, has also been denied.* It was held that an evidence that is often connected with truth, though not oftener than with falsehood is real evidence and deserves regard; to me this position appears absurd.

* Price, Ibid. 408.

SECTION V.

OF PLURAL TESTIMONY.

521. The application of this testimony cannot be clearly understood, until the mode of calculating probabilities is first explained.

CHAPTER VII.

OF THE APPLICATION OF CALCULATION TO PROBABILITY.*

SECTION I.

OF THE CHANCES OF EVENTS.

522. The known possibility of any event is called a *chance*; and where there are several known causes equally capable of producing different events, it is inferred that there are as

* See Priestley's *Hartley*, p. 169,—171.

many

many *chances* of those events; and when it is known that some or other of those causes have acted, or must necessarily act, those chances have been, in a loose way and improperly, called *probabilities* by writers on the doctrine of chances.

523. The doctrine of chances is that, which from a given number of events equally possible, (as far as we know,) infers the probability or improbability of each, or of the combinations of each, and also from a certain number of events, or combinations of events, infers their causes. The distinction of casual and empiric probabilities has been already noted, No. 426.

524. Thus if we take a common die, and suppose the turning up of each of its six faces equally possible, it is *certain* that on projecting it, some one or other of these six faces will be turned up; for it must lie on some or other of these faces, and then the opposite face will appear, and hence each of these faces may be called the cause of the appearance of the opposite face: but as only one of these faces can shew an ace, the chance of throwing an ace, is only one chance out of six chances,

or $\frac{1}{6}$, and the odds against it are five out of six, or $\frac{5}{6}$ of a certainty.

525. Hence *the general rule is*, that if among a certain number of equal possibilities or chances, there are some favourable to a given event, that is, tend to produce it, and some adverse to its production, or productive of a different or contrary event, the probability or improbability of such event, is as the number of the favourable chances, divided by the sum of all the chances, both favourable and unfavourable; as in the last example, there was only one chance of casting an ace, and five chances of throwing other numbers. The sum of both was $1 + 5$, that is 6.

526. Therefore the sum of all the known chances, favourable and unfavourable, to an event, is equal to the sum of all the possibilities of any event. And as those that are favourable, are only a part or fraction of the whole number of possibilities, they are expressed by a fraction, as in the above example, and for the same reason, so may those that are adverse to it. Now the favourable and unfavourable together, make up the whole of the chances; therefore if the fractions expressing

pressing each of them, be added together, they make up an *unit*. So in the above examples, $\frac{1}{2}$ added to $\frac{1}{2} = \frac{2}{2} = 1$.

527. Again, as in every case it is *certain* that a given event will either happen or not happen, all the possibilities favourable and unfavourable, are comprehended, and consequently *certainty* is expressed by an *unit*; therefore the highest probabilities are those that are expressed by fractions, that approach most to an unit, though none can ever reach it; for they would then cease to be probabilities, being converted into a certainty, though some approach so near to it, that they are usually taken for it, as the probability that the world will last another year, &c.

528. As certainty is expressed by 1, so is *doubt* or an equality of chances by $\frac{1}{2}$. So if in a covered box there are an equal number of black and white balls well mixed, and through a perforation in the box the hand be introduced, that one or other of these balls

☞ In the sequel + denotes *more*, - denotes *less*, × denotes *multiplied*, and = denotes *equal*, and two or more letters subjoined denote the multiplication of those numbers they stand for into each other.

will

will be drawn, is certain. And as the possibilities are only 2, the chance of drawing a white ball is $\frac{1}{2}$, and the chance of drawing a black ball is also $\frac{1}{2}$; and as those possibilities balance each other, consequently which of them will be drawn is uncertain or *doubtful*.

529. Note, the word *uncertain* is capable of two significations, for we are uncertain when we doubt, and also when we are totally ignorant of any reason, whether of affirming or denying; for instance, whether the number of grains of sand in a box is odd or even.

530. Hence the *probability* of an event consists in the apparent *superiority* of the possibilities, causes, or reasons tending to produce the belief of its existence over those that are adverse to that belief, and consequently it is denoted by a fraction higher than $\frac{1}{2}$, as $\frac{2}{3}$, $\frac{3}{4}$, &c.

So the *improbability* of an event consists in the apparent *inferiority* of the possibilities, causes or reasons for believing its existence, to those that oppose them, and therefore it is denoted by a fraction lower than $\frac{1}{2}$ as $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, &c., remembering always, that the denominator of the fraction comprehends all the possibilities,

possibilities, &c. favourable and adverse. And consequently, by subtracting the favourable (which are found in the numerator) you have the adverse,

Of Independent and Dependent Events.

SECTION II.

OF INDEPENDENT EVENTS.

531. An independent event is that, whose existence has no connexion with that of another event. Thus throwing an ace on one die, does not affect the possibility of throwing it again on the same or another die.

532. But the possibility of a *joint event*, though each is independent of the other, singly considered, is affected by all the possibilities of failure in each of the conjoined events. Now there are thirty-six possible events on two dice, considered conjointly; for each has six faces, and each face of the one may be combined with the same or a different

different face of the other. Therefore the possible appearances are $6 \times 6 = 36$, but of these 36 combinations there is but one productive of the appearance of two aces, or any other two faces you please to name; therefore the chance of throwing two aces either together or successively on one die is $\frac{1}{36}$; for though each event considered *separately* is independent of the other, yet the possibility of the *joint* event necessarily refers to the possible joint results on each; for if at first you throw an ace, the chance of throwing a second time is only $\frac{1}{6}$, but if you at first throw a *deuce*, &c. the joint event of throwing two aces becomes impossible.

533. Hence the general rule is, that the joint probability of two or more independent but joint events, is equal to the product of the chances of each. Thus the probability of throwing three aces successively on one die, is, $\frac{1}{6} \times \frac{1}{6} \times \frac{1}{6} = \frac{1}{216}$, though such an event would excite a suspicion of some bias in the die.

534. So if the probability that one man, *A*, shall live a year, be $\frac{6}{10}$, and the probability of
the

the life of another man, *B*, for one year be $\frac{8}{10}$, the probability that *both* shall live another year, is $\frac{6}{10} \times \frac{8}{10} = \frac{48}{100}$, which is remarkable; for thus we see that the concurrence of two events is less probable than the occurrence of either, and is even improbable, though each is probable, and totally independent of the other.

535. Hence the happening of *two or more doubtful* or equicafual independent facts, is improbable, and the more so as they are more numerous, for the probability of each is $\frac{1}{2}$; therefore the joint chance of two such facts, is, $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$, and of three such facts is, $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$.

536. So the joint happening of two independent improbable facts is still more improbable; for, supposing the improbability of one of them $\frac{1}{4}$ and the other $\frac{1}{5}$, then their joint improbability would be $\frac{1}{20}$.

537. So the improbability of the death of *A* within the year being $\frac{4}{10}$, and of the death of *B* $\frac{2}{10}$, the improbability that both shall die within the year, is $\frac{4}{10} \times \frac{2}{10} = \frac{8}{100}$.

538. And

538. And the probability that one of ~~the~~ events shall happen, and the other fail, is as the probability of the happening of the one, multiplied by the probability of the failure of the other. So in the above case, the probability that *A* shall live, and that *B* shall die, is $\frac{6}{10} \times \frac{2}{10} = \frac{12}{100}$; and the probability that *B* shall live and *A* die, is $\frac{8}{10} \times \frac{4}{10} = \frac{32}{100}$.

SECTION III.

OF DEPENDENT EVENTS.

539. A dependent event, is that probability whose happening or failure arises from, or is increased or diminished by, the probability of the happening or failure of another event. These events differ from *joint* independent events above mentioned in this, that the failure of one of the joint events prevents indeed the *conjunction* from taking place, but not the happening of the other event; whereas the happening of a dependent event is either promoted, or prevented, or rendered less

less probable, by the happening or failure of another event.

540. Thus if a friend of mine has sailed to Africa in a fleet of twelve ships, and three of these ships were lost in a storm, and $\frac{1}{3}$ of the crew of the nine ships that escaped the storm, perished from the hardships they endured during the voyage, and on shore, and I inquire into the probability of his having escaped both dangers, then—

First, it is plain that the probability of his having escaped the hardships endured during the voyage and on shore, depends on the event of his having escaped the storm; consequently the probability of this last-mentioned event is to be calculated first; for if it were found improbable (which it is not,) the second event must fail; but if it be found probable, the second event may also exist or not, according to the degree of its separate probability, conjoined with that of the first.

541. Hence *the general rule is*, that the probability of the first or independent event being found, the probability of the second, which depends on it, is next to be sought, as if it were independent upon the first; but as, in fact,

fact, it is not independent upon it, but involved in it, this separate probability is to be multiplied into that of the first event, and the product gives the real probability of the second event.

542. If the first event be found improbable, the second must fail, and if a third event depends on the second, and the second is found improbable, the third must also fail.

543. Thus, in the foregoing example, since nine ships out of the twelve escaped the storm, the chances favourable to my friend's escape in one of them, are nine out of twelve; the probability then of his having escaped the first danger, is $\frac{9}{12} = \frac{3}{4}$. This being supposed, the probability of his having escaped the second danger, since only $\frac{1}{3}$ of those who survived the storm perished, is $\frac{2}{3}$; hence the probability of his having escaped both dangers, is $\frac{3}{4} \times \frac{2}{3} = \frac{6}{12} = \frac{1}{2}$; therefore it is merely doubtful, whether he has survived both dangers. If only $\frac{1}{4}$ of the crew escaped the second danger, then his survival would be improbable, for $\frac{3}{4} \times \frac{1}{4} = \frac{3}{16}$. And, if only two
out

out of the twelve ships had perished, and consequently ten had escaped the first danger, and $\frac{2}{3}$ of the crew had escaped the second danger as above, then the probability of his survival would be $\frac{10}{12} = \frac{5}{6}$, and $\frac{5}{6} \times \frac{2}{3} = \frac{10}{18} = \frac{5}{9}$, a slight probability.

SECTION IV.

OF THE PROBABILITY DERIVED FROM THE SIMILITUDE OF EVENTS.

544. This relates either to the past or future existence of similar events, or to the nature and properties of the causes of those events: this last consideration may be a subject of physical or metaphysical discussion; the first only regards our present inquiry.

545. When the causes productive of different events, are either wholly or for the most part unknown, the probability of such events, whether past or future, in similar cases, is deduced from their observed similitude to each other, by a method of reasoning exactly the converse of that mentioned No. 525, 530; for,

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as

547. But where in cases whose circumstances are imperfectly known, as well as the causes or complication of causes, a considerable variation or discordancy of events has been long observed (as in the weather,) the probability of a particular event is deduced, partly from the ratio of events of this kind to their failures, or to events of a contrary or different kind, and partly from the similarity or dissimilarity of their circumstances, and partly from their connexion with previous, or, if past, with subsequent events.

SECTION V.

OF THE PROBABILITY INFERRED FROM THE RATIO OF SIMILAR AND DISSIMILAR EVENTS.

548. When we know nothing of an event or of its causes, but that it has happened once in one trial, or one particular occasion, there exists only a faint expectation or suspicion of its happening again, on the same occasion; for though an event of some kind may be expected, still it is uncertain whether any will
happen,

happen, or if any does happen, whether it will resemble the former event; therefore the probability in this case is expressed by $\frac{1}{2}$, for in the numerator of this fraction, we have one favourable chance, and in the denominator we have that same favourable chance, and also one unfavourable chance that we may suspect to happen, then we have $\frac{1}{1+1} = \frac{1}{2}$.

549. But if in two trials or cases apparently similar, two similar events have happened, we feel a stronger expectation of a third similar event in a third trial; yet with some suspicion of an adverse event. Therefore the numerator of the fraction that expresses this probability, will have two favourable chances from what has already happened, and the denominator those same favourable chances, and the one unfavourable chance which is suspected, and consequently it is $\frac{2}{3}$.

550. And if in two trials the event has happened once and failed once, or a contrary event has happened, we feel no expectation whatsoever of its happening or failing in another trial, as both are equally contradicted by past experience, therefore its probability = 0.

551. If in three trials three similar events have happened, we feel a very strong expectation of a fourth similar event in a fourth trial; but still also some suspicion of an adverse or a failure, therefore this probability will be expressed by $\frac{3}{4}$, and the expectation of a similar event, is constantly augmented by similar results in similar trials, until it increases nearly to a certainty.

552. But if in three trials only two similar events have happened and one failure, or a different event, then on a fourth trial, our expectation of an event similar to two similar events is weakened; then the numerator of the fraction that expresses the probability of a fourth similar event, will have the two favourable chances from what has already happened, and one favourable chance expected, and the denominator will have the three favourable chances, and one unfavourable chance from the event that has happened, and also one unfavourable chance that may be expected from the experience of that which happened, therefore it will be $\frac{3}{3+1+1} = \frac{3}{5}$.

553. Thus, therefore, the probability of
variable

variable events may be expressed; for if in a given number of trials, in the same circumstances, an equal number of similar events, and of their failures, or of differing events, have taken place, then the probability of any such events $= 0$.

554. But if the number of similar events exceeds that of the failures of such events, in the same circumstances, or of differing events, then let the number of similar events be m , and of the dissimilar, or failures, be n . Then the fraction that expresses the probability of the similar events will be $\frac{m+1}{m+1+n+1} = \frac{m+1}{m+n+2}$.

555. And the probability that n will happen, and m fail, will be $\frac{n+1}{m+n+2}$. It is plain that the above reasoning relates to physical and moral events only, and not to casual or aleatory events, for these I have not considered, as they are, if purely casual, governed by no constant laws.

SECTION VI.

OF THE APPLICATION OF CALCULATION TO TESTIMONY,
AND OF TESTIMONY TO FACTS,

556. The credibility of witnesses is not estimated merely by the number of times the fact testified has been found conformable to their report, and the number of times in which their testimony was found to be false; for many persons, either from want of attention to what they might have seen, or from a desire of exciting surprise, do, at least in trivial matters, frequently stray from truth; but from the knowledge we have, of their possessing the several qualifications mentioned No. 445, and which, for the greater ease of calculation, we have reduced to two, (No. 486,) named *integrity* and *knowledge*. These qualifications are scarce ever possessed in so high a degree, that nothing can be added to them in any possible case, especially if the sanction of an oath is not superadded; and
even

even if it be, yet from a defect of memory in some men, especially as to old transactions, or from a defect of knowledge of the matter in question, mistakes may occur involuntarily. Hence these qualifications are possessed in various degrees, by different persons, and even by the same person in different cases. Plutarch is not entitled to the same credit, when he speaks of Herodotus, as he is in other cases. We must, therefore, form in our own minds an estimate of the degrees in which these qualifications are possessed, by different persons, in particular cases, and also of the degrees in which those qualifications may be supposed to be *defective*. The former constitute the chances favourable to their credibility, and the latter the chances adverse to it. By a deficiency, all that is wanting of any qualification to reach a certainty, that is, an unit, is meant.

557. Let the knowledge of the witness be denoted by k , and its deficiency k' . Let his integrity be denoted by I , and its deficiency by I' , then his credibility will be expressed by the fraction $\frac{kI}{kI+k'I'}$.

558. This

558. This formula requires *no* demonstration: we see the favourable chances, namely the degrees, in which knowledge and integrity are supposed to be possessed, multiplied into each other, and placed in the numerator; and this product, added to the product of the deficient degrees multiplied into each other, is placed in the denominator, which thus contains the sum of all the favourable and unfavourable *chances*. So I call the reasons favourable or unfavourable to the credit of the witness.

559. This formula may be further abridged, by denoting the products of the favourable chances to the *witness*, that is k and I , or $kI = a$, and that of the unfavourable or defects, $= a'$.

Now to apply testimony to facts, let the chances favourable to the *fact*, be denoted by b , and the unfavourable by b' . (How these are found, See No. 430.)

560. Then to find the probability of the fact after an *affirmative* attestation, let the chances, favourable to the existence of the fact, be multiplied into those, favourable to the credit of the witness, and let this product
be

be divided by the same product, and also by the product of the chances unfavourable to the existence of the fact, into those unfavourable to the credit of the witness; and thus the numerator will contain the product of the favourable chances, and the denominator, the sum of the products, both of the favourable and unfavourable chances; consequently, the formula for discovering the probability of a fact, after an attestation that affirms it, is

$$\frac{ba}{ba + b'a'}$$

561. If the attestation be *negative*, that is, if the witness *denies* the existence of the fact, then let the chances *favourable* to the probability of the fact, be multiplied into the chances *unfavourable* to the credit of the witness, and let this product form the numerator, and let the chances *unfavourable* to the probability of the fact be multiplied into those *favourable* to the credit of the witness, and let both products form the denominator of the fraction; then the formula is $\frac{ba'}{ba' + ba}$. This fraction gives the state of the probability of the fact after its denial, by a credible witness.

562. Now to apply these formulas to the attestation

attestation of facts, let it be recollected, that all testimony is either *dubious* or *credible*, and either affirmative or negative of the fact. *False* testimony, or that whose credibility is below $\frac{1}{2}$ cannot be admitted, as such witnesses are incompetent. And indeed, *dubious* testimony is useless, as will presently be seen. The facts also, to which testimony is applied, are either *certain*, or *probable*, or *indifferent*, or *equicafual*, or improbable in various degrees, (mentioned No. 498—504,) or *supernatural*, or *miraculous*, or *absurd*, or *mixed*.

SECTION VII.

OF TESTIMONY APPLIED TO FACTS THAT ARE CERTAIN.

563. Facts which we consider as certain, are either antient and long since past, or of modern date. The former being ascertained by antient historians, are incapable of any addition or diminution, but by destroying the credit of those historians. Such are the Argonautic expedition, the siege of Troy, the
Roman

Roman history, previous to the taking of Rome by the Gauls, &c.—but facts of a recent date, rendered certain by the unanimous, and uncontradicted testimony of numerous living witnesses, such as the existence of Pekin, or Ispahan, &c. do not admit of any increase or diminution of their certainty by any testimony.

SECTION VIII.

OF TESTIMONY APPLIED TO PROBABLE FACTS, No. 490.

564. If the existence of a probable fact be affirmed by a *doubtful* witness, its probability is not increased: for suppose the probability of the fact to be $\frac{6}{10}$, and the credibility of the witness $\frac{1}{2}$, then the chance favourable to the credibility of the witness is only one, and the chance unfavourable to his credit, is only 1, for $1 + 1 = 2$, which is the denominator of the fraction, which contains both the favourable and unfavourable chances. Now the chances favourable to the existence of the fact, are six,
and

and the chances unfavourable to its existence, $=4$ ($10-6$), then the probability of the fact after attestation, is $\frac{1 \times 6 = 6}{1 \times 6 + 1 \times 4} = \frac{6}{6+4} = \frac{6}{10}$. Hence it is evidently superfluous to apply the *negative* testimony of such a witness, for it is equally incapable of effecting any alteration.

566. But if a probable fact, as $\frac{6}{10}$, is affirmed by a credible witness, whose credibility, for instance, is $\frac{6}{10}$, then its probability is increased; for the chances favourable to the credit of the witness are six, and those unfavourable to his credit are four. So also the chances favourable to the object are six, and the unfavourable are four, then $ab = 6 \times 6 = 36$, and $a'b' = 4 \times 4 = 16$; consequently the fraction expressing the probability of the fact after attestation, is $\frac{36}{36+16} = \frac{36}{52} = \frac{9}{13}$, which is an increase of the probability of the fact, for $9.13 :: 6.8.66$; so that instead of $\frac{6}{10}$, we have $\frac{6}{8.66}$, and yet $\frac{6}{10}$ is a very low probability, and $\frac{6}{10}$ also a very low credibility.

567. If the probable fact be *denied* by a witness, whose credibility is just *equal* to the probability of the fact (as it was *affirmed* in the

the

the above case,) then the fact after attestation is found *doubtful*; thus, if a fact whose probability is $\frac{6}{10}$, is denied by a witness, whose credibility is $\frac{6}{10}$, then the formula No. 561, we have $ba' = 6 \times 4 = 24$ $b'a = 6 \times 4 = 24$; therefore the fraction expressing this probability, is $\frac{24}{24+24} = \frac{24}{48} = \frac{1}{2}$.

568. If a probable fact be denied by a witness of *inferior* credibility, as for instance, if a fact, whose probability is $\frac{8}{10}$, is denied by a witness whose credibility is only $\frac{6}{10}$, its probability is diminished, but not destroyed; for here $ba' = 8 \times 4 = 32$, and $b'a = 2 \times 6 = 12$, then we have $\frac{32}{32+12} = \frac{32}{44} = \frac{8}{11}$, the probability after negative attestation; hence the probability is diminished from $\frac{8}{10}$ to $\frac{8}{11}$.

569. If a probable fact is *denied* by a witness, whose credibility is *superior* to the probability of the fact, as if a fact whose probability is $\frac{6}{10}$, is denied by a witness whose credibility is $\frac{8}{10}$, it becomes improbable, for here $ba' = 6 \times 2 = 12$, and $b'a = 4 \times 8 = 32$, then $\frac{12}{12+32} = \frac{12}{44} = \frac{6}{22} = \frac{3}{11}$.

U *

SECTION

SECTION IX.

OF TESTIMONY APPLIED TO INDIFFERENT OR EQUICASUAL FACTS.

570. If such a fact be *affirmed* by any credible witness, it gains a degree of probability equal to the credibility of the witness, No. 493. Thus the probability of such facts being $\frac{1}{2}$, suppose it *affirmed* by a witness whose credibility is $\frac{6}{10}$, then $ba = 1 \times 6 = 6$, and $b'a' = 1 \times 4 = 4$, then $\frac{6}{7+4} = \frac{6}{10}$.

571. If it be *denied* by a credible witness, it becomes improbable in proportion to the credibility of the witness, No. 493.

Thus if a fact be indifferent or equicasual, as $\frac{4}{8}$, and it be denied by a witness, whose credibility is $\frac{6}{10}$, then $ba' = 4 \times 4 = 16$, and $b'a = 4 \times 6 = 24$, then $\frac{16}{16+24} = \frac{16}{40} = \frac{8}{20} = \frac{4}{10}$.

END OF VOL. I.

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LOGIC;

OR,

AN ESSAY

ON

THE ELEMENTS, PRINCIPLES,

AND DIFFERENT

MODES OF REASONING.

BY

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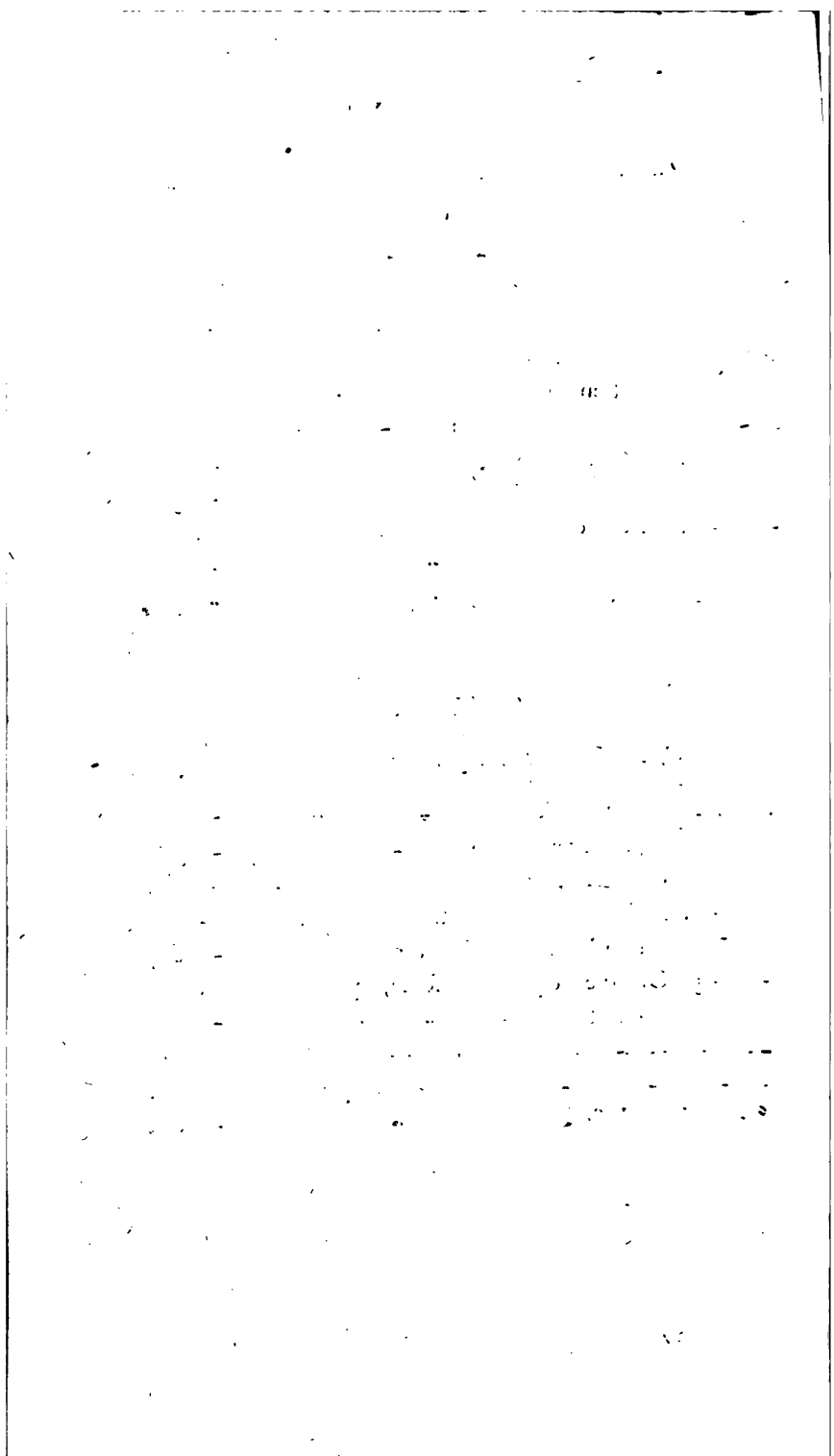
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LOGICK.

CHAPTER VII.

OF THE APPLICATION OF CALCULATION TO PROBABILITY.

SECTION X.

OF TESTIMONY APPLIED TO NEUTRAL FACTS.

572. Calculation cannot be applied to these before it be known what class of facts they approach most to, and their state may be calculated accordingly. See *ante* No. 495.

SECTION XI.

TESTIMONY APPLIED TO IMPROBABLE FACTS, AS THE EXTRAORDINARY.

573. We may state the improbability of *extraordinary* facts at from $\frac{4}{10}$ to $\frac{1}{20000}$, and of *extravagant* facts at $\frac{1}{1000000000}$, and of *unnatural* facts, at $\frac{1}{10000000}$, but these vary in different countries.

The calculation being the same in all cases, where the improbability may be known, or conjectured, I shall instance it in simple cases only.

X 574. *Improbable*

574. *Improbable* facts, vouched by a witness whose credibility is *equal* to the improbability of the fact, that is, who is just as credible as the fact is improbable, or (more technically) whose favourable chances are as much above $\frac{5}{10}$, as the unfavourable are below it, if 10 be the denominator, (or above doubtful, if there be any other denominator,) are rendered *doubtful*, after such attestation, No. 501. Thus if the improbability of the fact is $\frac{2}{10}$, and the credibility of the witness $\frac{8}{10}$, here 8 is as much above 5, as 2 is below it; for the difference from 5 in both cases is 3; then by the affirmative formula, No. 560, $\frac{ba}{ba+ba'}$, we have $ba=2 \times 8$, and $b'a'=8 \times 2$, consequently $\frac{16}{16+16}=\frac{16}{32}=\frac{1}{2}$ or doubtful.

575. If the improbable fact be *denied* by such a witness, it becomes more improbable; for, by the negative formula, No. 561, we have $\frac{ba'}{ba'+ba}$; then, if a fact whose improbability is $\frac{2}{10}$ be denied by a witness, whose credibility is $\frac{8}{10}$, we have $ba'=2 \times 2$, and $b'a=8 \times 8$, then $\frac{4}{4+64}=\frac{4}{68}=\frac{2}{34}=\frac{1}{17}$ instead of $\frac{1}{5}$, which it at first was.

576. If

576. If the improbable fact be *affirmed* by a witness of a degree of credibility *inferior* to the degree of improbability of the fact, its improbability is lessened, but not destroyed, No. 502; for, by the affirmative formula, as above, the improbable fact being $\frac{2}{10}$, and the credibility of the witness $\frac{6}{10}$, we have $ba=2$

$\times 6$, and $b'a'=8 \times 4$, then $\frac{12}{12+32}=\frac{12}{44}=\frac{6}{22}=\frac{3}{11}$.

577. But if the improbable fact be *denied* by a witness of *inferior* probability, its improbability is increased, No. 504. Thus, as in the above case, the state of the fact is $\frac{2}{10}$, and of the witness $\frac{6}{10}$; then by the negative formula, we have $ba'=2 \times 4$, and $b'a=8 \times 6$, consequently $\frac{8}{8+48}=\frac{8}{56}=\frac{4}{28}=\frac{2}{14}=\frac{1}{7}$.

578. If the improbable fact is *affirmed* by a witness, whose credibility is *superior* to the improbability of the fact, it becomes *probable* or *certain* according to the degree of superiority. *Ante*, 504.

Thus if the improbable fact be $\frac{2}{10}$, and the credibility of the witness $\frac{9}{10}$, then $ba=2 \times 9$, and $b'a'=8 \times 1$, then $\frac{18}{18+8}=\frac{18}{26}=\frac{9}{13}$.

X 2

579. After

579. After what was seen, No. 577, it were needless to shew, that if an improbable fact were *denied* by such a witness, it would become highly improbable. It would indeed, in the last instance, become $\frac{1}{37}$. *Ante*, 504.

SECTION XII.

OF TESTIMONY APPLIED TO SUPERNATURAL AND MIRACULOUS FACTS.

580. The testimony necessary to induce a belief of such facts, must be such as to produce a *certainty*, and not a mere probability. For the facts themselves being naturally *impossible*, cannot be proved by testimonies, whose truth is merely probable; but that there may be testimonies capable of producing a moral *certainty*, and particularly that those of christianity are such, I have already shewn, No. 352, &c. and may be seen at large in Dr. Paley's excellent treatise.

SECTION

SECTION XIII.

OF THE BELIEF OF A WITNESS.

581.^a The belief of a witness is the opinion which he forms, concerning the existence of a fact, whether affirmative or negative, or of the causes, circumstances, or motives, that concern its existence. It is, therefore, rather an *authority* than a *testimony*, and consequently is of greater or less weight, according to the *intelligence* of the person that holds and delivers it.

581. *Note* also, that the affirmative testimony of *ocular* witnesses is preferable, or more to be relied on, as to their object, than the testimony of *auricular* witnesses, as to their objects; for what a man does, is more easily perceived than what a man says. This last may be misunderstood, or mistaken, or not distinctly heard.

SECTION XIV.

OF PLURAL TESTIMONY.

582. By plural testimony I understand, either that, which, originating in simultaneous observations made by two or more persons, may be called *original*; or it may be delivered by the original witness to another, who delivers it to a third, by the third to a fourth, &c. This may be called *successive*, or *transmitted* testimony. I shall first treat of plural original testimony; and as this testimony may be *concordant*, *discordant*, or *contradictory*, each shall be separately considered.

SECTION XV.

OF CONCORDANT ORIGINAL TESTIMONY.

583. The credibility or force of concordant and independent witnesses, is as the product of the chances *favourable* to each, multiplied
into

into each other, (this product forms the *numerator* of the fraction, that expresses their credibility,) and divided by the product of the chances *unfavourable* to each, that is, of their several *deficiencies*; these two products added to each other, present the sum of the several chances, both *favourable* and *unfavourable*, and therefore form the *denominator* of the fraction. Thus, if there were two witnesses, and if the credibility of one of the witnesses were $\frac{6}{10}$, and of another $\frac{7}{10}$, the favourable chances of each are 6 and 7, and their product is 42. The unfavourable chances or deficiencies are 4 and 3, their product is 12; then their resulting combined credibility, is

$$\frac{42}{42+12} = \frac{42}{54} = \frac{777}{1000}.$$

And if there were three witnesses, whose credibilities were respectively $\frac{6}{10}$, $\frac{7}{10}$, and $\frac{8}{10}$, then the product of the favourable chances would be, $6 \times 7 \times 8 = 336$; and their several deficiencies being 4, 3, and 2, and the product of these being $4 \times 3 \times 2 = 24$, the fraction representing the combined credibility is

$$\frac{336}{336+24} = \frac{336}{360} = \frac{933}{1000}.$$

Hence we see the immense

X 4

force

force of the testimony of numerous concordant witnesses.

584. Thus the force of the combined testimony of ten of the apostles, that of each separately, (abstracting from their sufferings, and other circumstances,) being rated at only

$$\frac{9}{10}, \text{ would amount to } \frac{3486784401}{3486784401+1} = \frac{3486784401}{3486784402}.$$

585. Hence we see the stress our law justly lays on the concordant opinion of twelve jurymen, if obtained without coercion, and formed by men of sufficient integrity and knowledge; otherwise their verdict is in reality of little or no worth.

586. Observe, however, that the credibility of one witness of *high* credibility, may be *superior* to the combined credibility of two witnesses, whose separate credibilities are *lower*.

Thus if the credibility of one of the concordant witnesses, be $\frac{6}{10}$, and that of the other $\frac{7}{10}$, then their combined credibility is,

$$\frac{42}{42+12} = \frac{42}{54} = \frac{77}{100}.$$

Whereas the credibility of one witness may be $\frac{8}{10} = \frac{80}{100}$; and the difference would be still greater, if the credibility of the single witness were $\frac{9}{10} = \frac{90}{100}$.

587. It

587. It is supposed also, as has been already mentioned, that these witnesses are *independent*, that is, have not agreed with each other to make the same report. This, indeed, is implied in the degrees of integrity and veracity which we suppose them to possess, and the want of which, without sufficient reason, we should not suspect; but if we have sufficient cause to suspect, that the concordancy of their testimony arises from any other reason but their joint perception of the same object, the force of their joint testimony is weakened, in proportion to the probability of the truth of that reason. Now, to find how much the credibility of the combined testimony is thereby diminished, let the probability of the existence of the undue cause of the concordancy of the testimony be stated; then,

588. Let the chances favourable to the credit of the joint testimony $=a$, and those unfavourable to it $=a'$; let the chances favourable to the existence of a sinister cause $=b$, and those unfavourable $=b'$; then the resulting credibility of the joint testimony is

$$\frac{ab'}{ab'+a'b}$$

589. As

589. As there is no precise measure of the credibility of any witnesses, and as different persons may denote the credibility of witnesses by different fractions, I think an intelligent jury should strike an average measure of all their particular estimations, as also of their estimations of the internal probability of the fact attested, and upon the result of the application of these average measures, form their joint opinion; the same mode may be followed in references.

590. The concordancy even of two dubious independent witnesses, is of some weight; and of four such witnesses, the credibility is still stronger, and so much the greater, as they are more numerous; for in proportion to their numbers, their disagreement is much more probable than their agreement, in any particular statement. If therefore, they do agree, this agreement must have some cause; and in the supposition that they are independent, that is, have entered into no concert with each other, no other cause of their agreement can be assigned, but the reality of their having jointly perceived the object attested.

591. The credibility therefore of their
concordant

concordant attestation, is equal to the improbability of their agreement, which is found by subtracting the product of the fractions, resulting from their union, from *one*. Thus the probability of each of the witnesses being $\frac{1}{2}$, the product of two of them is $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$. and $\frac{1}{4}$ subtracted from 1 = $\frac{3}{4}$, for $\frac{1}{4} + \frac{3}{4} = 1$; $\frac{3}{4}$ therefore expresses the improbability of their agreement, and consequently is the measure of the credibility of their joint attestation,

592. To make this conclusion perfectly clear, let us notice the chance of throwing a *head* upon a halfpenny: this is but one chance out of two, for a *harp* is equally possible. Therefore, the chance of turning a head is $\frac{1}{2}$, for only two events can happen; but the chance of turning a *head* twice, or on two halfpence, is only $\frac{1}{4}$, for four events may happen, and this is one of them; for upon one of them you may turn a *head*, and upon the other a *harp*; or upon the first you may turn a *harp*, and on the other a *head*; or you may
turn

turn harps upon both; or, lastly, you may turn *heads* on both.

593. Hence the credibility of three such witnesses being $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$, the credibility of their concordant attestation is $1 - \frac{1}{8} = \frac{7}{8} = \frac{875}{1000} = \frac{2}{10}$ nearly.

594. This result of the combined testimony of *doubtful* witnesses, is comfortable to a jury, to whom the credibility of the witnesses is frequently unknown; but to a *single* doubtful witness, even if he should agree with others that are credible, I should pay no regard.

595. As to witnesses whose credibility is below $\frac{1}{2}$, I think them unworthy of consideration, even if they should agree; for, as they are assumed to be false witnesses, their agreement must be imputed to some sinister cause.

596. From what has been said, No. 586, and 593, we may deduce, that the credibility of a witness of *high* credit, as $\frac{2}{10}$, is superior to that of three witnesses of doubtful credit, and often of many more.

below $\frac{1}{2}$, denotes improbability, or incredibility. In the above case, the credit of the first physician would by such subtraction be reduced to $\frac{1}{10}$.

SECTION XIX.

OF SUCCESSIVE OR TRANSMITTED TESTIMONIES.

629. If *A* relates to me a fact, which he heard from *B*, and that *B* heard it from *C*, and that *C* heard it from *D*, and that *D* was the immediate witness of the fact, here is a fact conveyed to me through four witnesses; but there is but one witness to the fact, namely *D*. And besides this *principal* fact, there are three distinct *subordinate* facts, namely, that *D* reported it to *C*, that *C* reported it to *B*, and that *B* reported it to *A*; each of these can attest no more, than his own reception of the fact, from the next preceding witness, and of the persons through whom he was informed it was conveyed.

Hence it is plain, that the aggregate
credibility

the second does no more than lessen part of the deficiency of the first; thus, says he, if the first witness gives me a probability of $\frac{5}{6}$, here $\frac{1}{6}$ is wanting to make that probability a complete certainty; and the second witness gives me $\frac{5}{6}$ of that deficiency, $\frac{1}{6} = \frac{5}{36}$; thus, if one of them gives a share of certainty for £1200, amounting to $\frac{5}{6}$, there remains but an assurance of $\frac{1}{6}$, or of £200, wanting to me for the whole, and the second witness gives me that; that is, to the $\frac{5}{6}$ before had, he adds $\frac{5}{6}$ of the $\frac{1}{6}$ which was wanting; so that there is now wanting, but $\frac{1}{6}$ of $\frac{1}{6} = \frac{1}{36}$, and consequently their joint attestation gives an assurance of $\frac{35}{36}$; (for since only $\frac{1}{6}$ is wanting to make a certainty, the fraction must be $\frac{35}{36}$.)

599. It must be owned this is a strange mode of calculation; for, in the first place, it is supposed, that the assurance of the first witness reaches to no more than to $\frac{5}{6}$ of the £1200, that is, to £1000, and that, as to that sum, it amounts to a certainty, (and indeed he calls it so;) whereas, it is evident that it reaches

reaches to the whole of the 1200; as the witness expressly asserts; and the $\frac{1}{6}$ wanting, relates to the credibility of the witness, and not at all to any particular part of the sum or thing attested.

Suppose such a witness attested that some man were dead, could it be said, that he gave an assurance of $\frac{5}{6}$ of his death?

Again, the testimony of the second witness extends to the whole £1200; and not to any particular portion of it; and therefore, confining it to $\frac{1}{6}$ of that sum, viz. £200, is merely arbitrary, and without any foundation.

600. As to what he adds in the corollary, I allow the instance he gives to be true though deduced from false principles; and it perfectly agrees with what I laid down, No. 591, namely, that the combined attestation of two dubious witnesses, gives $\frac{2}{3}$ of a certainty, and of three such witnesses, $\frac{7}{8}$ of a certainty, &c.

SECTION XVII.

OF VARIANT ORIGINAL TESTIMONY.

601. By *variant* testimony I understand that in which the reports of two or more witnesses differ, without being either contrary or contradictory to each other. If there be three witnesses, all three may differ, or two may agree and one differ; if there be four, three may agree, and one differ, or two may agree and two differ, or all four may differ, &c.; hence all the possible variations of witnesses, *relative to a single point*, are equal to the number of witnesses less 1.

602. Again, variations of testimony may respect either the substance of the fact, or its adjuncts, or its circumstances.

Thus, in the relation of a battle by three witnesses, one of them may say, that three regiments pursued the enemy five miles; another may say, that two regiments pursued the enemy three miles; and the third may say, that

that the enemy were pursued, omitting the number of miles.

603. Here all three agree as to the substance of the fact, viz. the pursuit, but they differ as to the adjunct, that is, the number of regiments that pursued, and as to the circumstance, that is, the number of miles to which the pursuit extended.

604. The substance and circumstances of a fact, are comprehended in a Latin line, *quis, quid, quot, ubi, quibus auxiliis, cur, quomodo, quando*. Here *quid* denotes the substance of the fact, *quis* and *quot* the agents, or adjuncts, and the remainder the circumstances.

605. Assertion of a fact by one witness, and its omission by another, equally capable of observing it, amounts to a variation in the substance of the fact, as is evident.

606. A variation as to the substance of the fact, in the testimonies of two witnesses *equally credible*, renders the testimony of each of them *doubtful*; for since the object, if it existed, should have been observed by both, there is as much reason to disbelieve its existence, from the omission of it, by one capable of discerning it, as there is of believing

it from the assertion of the other; and consequently they are to be considered as contradictory witnesses.

607. A variation in the attestation of the *adjuncts* of the fact, does not always invalidate their credibility as to the *substance* of the fact; for the completion of an action, often requires a considerable space of time. One witness may have observed it in its beginning, another in a middle period, and a third, towards the end: consequently, all may not have observed the same adjuncts. Thus in the case No. 602, two regiments might have pursued the enemy in the beginning, and three at the end of the conflict; thus the two demoniacs mentioned in the Gospel of St. Matthew, chap. 8, and of St. Mark, chap. 5, might have been successively cured.

608. Matthew may have observed both cures, others, only the last. But if the action were instantaneuous, and the result not notorious, then it seems to me that a variation in testifying the adjuncts of the fact, would affect the substance, and, if the witnesses were equally credible, render their testimony doubtful.

609. A variation in the attestation of the *circumstances* of a fact, does not affect the credibility of the witnesses, as to the *substance* of that fact: for their attention being principally directed to the substance, mistakes may arise as to the *time*, and often even as to the *place* and *manner*, which are of little importance.

610. From what has been thus stated, it follows that variant witnesses, may in some points be considered as *concordant*, and their testimony jointly calculated; in other points, as in No. 606, as *contradictory*; and in others, as merely *discordant*, but not opposite, and their credit separately estimated.

611. If there be several discordant witnesses, the testimony of those that agree, must be calculated, as that of concordant witnesses; and if all disagree, each must be calculated apart.

contemplating those that destroy this impression. Hence, these last, are either overlooked, or slightly surveyed; the former of course prevail, and the object appears probable.

645. On the other hand, when a danger apprehended is inconsiderable, and our imagination alarmed, though its probability may be remote, or inconsiderable, fear collects, and attaches our attention to the unfavourable chances only; we become incapable of balancing them with the favourable; and the danger is consequently magnified much above its real limits. Under the dominion, therefore, of intruding passions, we can form no true estimate of probability.*

* See 1 Search, p. 291, and 328; and Leland Deist. Writers, Letter XI. p. 176.

disorder to be seated in the liver ; here is an *indifferent* fact ; for, to all unskilled in medicine, one appears as probable as the other ; and the assertions are contrary, though not contradictory, for both may be false.

Then let the credibility of the first, whom I shall suppose the most credible, $= \frac{9}{10}$, and that of the least credible $\frac{8}{10}$; then the chances favourable to the assertion of the first physician are nine, and those unfavourable to that of the second physician $= 2$; then $9 \times 2 = 18$ is the numerator of the fraction. The chances favourable to the assertion of the second physician are 8, and the deficiency of the first physician $= 1$, and $8 \times 1 = 8$; then $\frac{18}{18+8} = \frac{18}{26}$, is the remaining credibility of the assertion of the first physician $= \frac{9}{13}$; so that his credit, by means of the opposition, is on this occasion considerably reduced, viz. from $\frac{9}{10}$ to nearly $\frac{7}{10}$. And by the second formula, the credit of the testimony of the second physician, is, by the opposition of the first, reduced to $\frac{4}{13}$, for $\frac{8 \times 1}{8 \times 1 + 2 \times 9} = \frac{8}{8+18} = \frac{8}{26} = \frac{4}{13}$, and consequently below credibility.

Y 4

618. If

618. If in the case of the physicians above mentioned, the assertion of the first physician were opposed by the *concordant* assertions of two physicians, whose respective credibilities were $\frac{8}{10}$, we must find the combined credibility of the concordant assertions, as in No. 583, and then compare the result with the credibility of the first physician.

Now the combined credibility is $8 \times 8 = 64$, and $2 \times 2 = 4$, then we have $\frac{64}{64+4} = \frac{64}{68} = \frac{32}{34} = \frac{16}{17}$; thus we see their joint assertion is somewhat more credible, than the assertion of the first physician; for, $16 : 17 :: 9, 411, \&c. 10$.

619. What has been said of the different opinions of physicians, may be observed also of the opinions of lawyers, and other varying reports, made by persons skilled in subjects not generally understood by the public.

With respect to Probable Facts.

620. If the credibility of the witnesses that oppose each other be equal, two opinions may be held; first, that these testimonies destroy each other, and secondly, that the
affirmative

affirmative testimony, coinciding with the probability of the fact, should on this occasion be preferred to the other. The first opinion, however, seems to me the juster; for if the first testimony were preferred, and the fact thus established, the opposite testimony would be of no effect, which is absurd; for, then it might as well not exist. It seems therefore, that in this case, the fact remains as if unattested, and can be maintained only by its internal probability.

621. But if the credibilities of the witnesses that oppose each other, be *unequal*, the resulting probability of the fact may be found by the following formula.

622. Let the chances favourable to the probability of the fact $=b$, and the unfavourable $=b'$;

Let the chances favourable to the credit of the witness who *affirms* it $=a$, and his deficiency $=a'$;

Let the chances favourable to the credit of the witness who *denies* it, $=n$, and his deficiency $=n'$;

Then the resulting probability of the fact

$$= \frac{dan'}{ban' + b'a'n}$$

Thus

Thus if the probability of the fact be $\frac{9}{10}$, and the credibility of the witness who affirms it $\frac{8}{10}$, and of the witness who denies it $\frac{7}{10}$, then we have $9 \times 8 \times 3 = 216$, the numerator of the fraction. And $1 \times 2 \times 7 = 14$, added to $216 = 230$, the denominator of the fraction $= \frac{216}{230} = \frac{108}{115} = \frac{27}{29}$ nearly, or more exactly, $\frac{27}{28.75}$, which exceeds the original probability of the fact by a small fraction; for $27, 28, 75 :: 9, 38.10$.

623. Thus we see, the results must vary according to the various probabilities of the object, and the various credibilities of the affirming and opposing witnesses.

624. What is here said of probable *facts*, may also be extended to probable opinions, supported and denied by unequal authorities.

It is well observed by Dr. Marsh, in his notes on Michaelis, vol. iii. p. 8;

“When we have certain knowledge of the existence of a fact, as that of an engagement between two armies, no contradictions in the accounts of that fact can disprove the existence of the fact itself. But when the question is in agitation, whether an alleged fact be
true

true or not, our *conviction* of the truth of it, will certainly be affected by the concurrence or contradiction of the testimonies in its favour. And if the contradictions are such, as to be wholly incapable of a reconciliation, the proof of the fact will certainly not be so satisfactory, as it would, if the witnesses agreed. But since not every deviation is a contradiction, and the same fact, as viewed by different persons in different lights, not only may, but must be reported by them in different ways; we must examine, whether the deviations are such, as may be explained on this principle. If they are, and the witnesses are in other respects credible, we have no reason for refusing our assent. Further, we must distinguish variations, in respect to concomitant circumstances, from variations in respect to the main fact; for the former are of much less importance than the latter."

With respect to Improbable Facts.

625. If *affirmed* and *denied* by the same number of witnesses *equally* credible, their improbability remains unaltered, as said, No. 620.

626. But

626. But if the credibilities of the opposite witnesses be *unequal*, the resulting state of the fact may be found by the formula No. 622.

With respect to contradictory Original Testimonies.

627. The credibility of these is calculated as that of contrary testimonies; the only difference is, that one must be true, and the other false, whereas contrary testimonies may be both false.

628. The method recommended by Mr. Hume, in his Essay on Miracles, p. 344, 345, for comparing and balancing contradictory testimonies, consists in deducting the *inferior* credibility from the superior; the remainder, he says, will show, how much the superior is weakened. If so, this absurdity would follow, that the credit of the most respectable witness would be destroyed by the opposition of one whose credibility is doubtful; for, suppose the credibility of the one to be $\frac{9}{10}$, and of the other only $\frac{5}{10}$, then $\frac{9-5}{10} = \frac{4}{10}$, which being
below

below $\frac{1}{2}$, denotes improbability, or incredibility. In the above case, the credit of the first physician would by such subtraction be reduced to $\frac{1}{10}$.

SECTION XIX.

OF SUCCESSIVE OR TRANSMITTED TESTIMONIES.

629. If *A* relates to me a fact, which he heard from *B*, and that *B* heard it from *C*, and that *C* heard it from *D*, and that *D* was the immediate witness of the fact, here is a fact conveyed to me through four witnesses; but there is but one witness to the fact, namely *D*. And besides this *principal* fact, there are three distinct *subordinate* facts, namely, that *D* reported it to *C*, that *C* reported it to *B*, and that *B* reported it to *A*; each of these can attest no more, than his own reception of the fact, from the next preceding witness, and of the persons through whom he was informed it was conveyed.

Hence it is plain, that the aggregate
credibility

credibility of these witnesses cannot be calculated like that of simultaneous witnesses, by multiplying the chances, favourable to the truth of each, into each other, as in No. 583; for there all the testimonies were supposed to bear upon one fact, but here they all relate to different facts, namely, their several receptions of the principal fact. Let us suppose the *general* credibility of each of these witnesses be known, and to be, for instance, $\frac{9}{10}$, then I have $\frac{9}{10}$ of a certainty, that *A* received the report from *B*; but though the general credibility of *B* is also supposed to be $\frac{9}{10}$, yet that he received this report from *C*, I have only the probability of the $\frac{9}{10}$ which I received from *A*, that is, $\frac{9}{10}$ of *B*'s $\frac{9}{10}$. For, if *B* made the report immediately to myself, I could have no greater probability of its truth, than $\frac{9}{10}$ by the supposition; and it were absurd to suppose, I could have the same portion of certainty, when I knew it not by my own senses, as if I had so received it.

630. Hence, the rule is to multiply the fractions, indicating the general credibilities
of

of each of the successive witnesses into each other; the product gives the aggregate credibility of all the witnesses.

631. As the credibilities, thus found, continually decrease, it is needless to push the calculation further than the point at which the aggregate becomes *doubtful*; that is, equal $\frac{1}{2}$: this point, if the credibility of each of the witnesses be supposed equal, (for instance $\frac{9}{10}$), is found without tedious multiplications, by dividing the given credibility by its deficiency, and multiplying the quotient into $\frac{7}{10}$; thus the original credibility being $\frac{9}{10}$, it is not rendered doubtful, until it is transmitted through six witnesses; for the deficiency of $\frac{9}{10}$ is 1. and 1) 9 (9 and $9 \times \frac{7}{10} = 6, 3$.

632. If the original testimony of each of the succeeding be $\frac{8}{10}$, it requires only a succession of three witnesses to render it doubtful; for the deficiency is 2 and 2) 8 (4 and $4 \times \frac{7}{10} = 2,88$, and in effect $\frac{8}{10} \times \frac{8}{10} \times \frac{8}{10} = \frac{512}{1000}$.

633. If the credibility of the original testimony were $\frac{99}{100}$, it would become doubtful only
by

copy is not barely $\frac{2}{10}$ of that $\frac{2}{10}$, but approaches very nearly to the credibility of the first testimony; and the reason is, that the existence of the first testimony being permanent for a number of years, its agreement with the copy may be frequently examined and ascertained, and if important, the comparison will undoubtedly be often made; whereas oral testimony being fugitive, its existence can be proved only by the credibility of the second witness, and the existence of this, only by a third witness, &c. The credibility of the copy is, therefore, to be deduced from the probability of its agreement with the original, which in material points, except party zeal interferes, is indefinitely great.

642. If there are two or more original written testimonies, concordant in all material points, and copies are taken of each, and these copies are found to agree, at least in substance, their credibility with respect to the object testified, is nearly equal to the concordant original testimonies: the same observation extends to all the successive copies, and the more numerous they are, the more they strengthen each other.

643. The

inferred, that even the object testified might become *dubious*, or even improbable; but falsely; the utmost that can be inferred is, that it may be left destitute of *external* testimonial proof, but its *internal probability* remains unaltered; and in many cases, this is sufficient to prove its existence. This always happens, when the present state of any object is evidently the consequence of some past fact. Thus, if we had no human testimony of an universal deluge, the confused heaps of marine shells frequently found in all countries, on the summit of high mountains, as well as a few feet under the actual surface of the earth, would sufficiently prove it. If we had no account of the conquest of Gaul by the Franks, or of Spain by the Moors, yet the mixture of Teutonic words in the modern French language, and of Arabic in the Spanish, would sufficiently prove these facts, to say nothing of medals and other monuments.

639. The above observations relate to a *single* chain or series of successive witnesses; but if there were two or more *collateral* series of successive witnesses of an indifferent, or

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probable,

probable, or even an improbable fact, sufficiently credible and independent on, and yet agreeing with each other, their credibility could never become dubious, from the improbability, that their agreement could arise from any thing else but the reality of the object testified. This improbability is as the product of their deficiencies, divided by the product of the chances favourable to their credit. Thus, if the credibility of the original witnesses in each series be $\frac{8}{10}$, and if there are two collateral series of concordant witnesses, the deficiency of each original witness will be two, and the chances favourable to the credit of each, eight; the improbability of their agreement from any other cause, but the reality of the object will be $\frac{2 \times 2}{8 \times 8} = \frac{4}{64} = \frac{1}{16}$; and if there be three such series, the improbability will be $\frac{1}{64}$, &c.

SECTION XX.

OF WRITTEN TESTIMONIES.

640. Hitherto we have considered successive testimonies in the abstract, and the conclusions laid down relate chiefly to *oral* testimonies; but the credibility of testimonies committed to writing, is vastly stronger, because not only the original witness has more leisure to weigh his account, and render it more accurate, and his testimony may be preserved, without any alteration, at least one hundred years, and often three or four hundred years; but also, because within that space of time, innumerable copies of it may be taken, and if taken, it is scarce possible, that in the greater number of them, any material error can be committed, or at least, that the same should be found in all of them; if any such be committed, it would easily be corrected by reference to the original.

641. Hence if the credibility of a written testimony be $\frac{9}{10}$, the credibility of the first

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contemplating those that destroy this impression. Hence, these last, are either overlooked, or slightly surveyed; the former of course prevail, and the object appears probable.

645. On the other hand, when a danger apprehended is inconsiderable, and our imagination alarmed, though its probability may be remote, or inconsiderable, fear collects, and attaches our attention to the unfavourable chances only; we become incapable of balancing them with the favourable; and the danger is consequently magnified much above its real limits. Under the dominion, therefore, of intruding passions, we can form no true estimate of probability.*

* See 1 Search, p. 291, and 328; and Leland Deist. Writers, Letter XI. p. 176.

SECTION XXI.

OF THE POSSIBILITY OF DENOTING THE DEGREES
OF PROBABILITY AND CREDIBILITY BY NUMBERS.
RULES FOR THE NOTATION OF CREDIBILITIES, AND
THE ADVANTAGES RESULTING FROM SUCH NO-
TATION.

646. It is allowed, that the chances on dice or cards, and consequently the probability of any event relating to them, may be ascertained with the greatest accuracy, as the numbers, favourable and unfavourable, are accurately known; but it is thought by many, that the estimation of the events of common life, and of the credibility of witnesses in numbers, is impossible; because, we have no standard measure, wherewith to compare them, no units, from whose repetition a number can arise; consequently, that all precise estimation must be arbitrary, and therefore useless.

647. Nevertheless, it should be observed, that all measures were originally arbitrary, and became fixed, only by convention and
Z 4 agreement.

agreement. Thus *a foot* is a conventional quantity, arbitrarily fixed upon, and without any determinate foundation in nature, and therefore different in different countries. The same may be said of *weights*, and of measures of capacity, as *pints* or *gallons*; and of measures of qualities, as of *heat*, *cold*, *wet*, *dry*, &c. : in the same manner, probability and credibility are real, though invisible quantities, of which there are different degrees, which have their foundation in nature; for probability is founded on the number of cases in which an event happened, compared with the whole number in which it happened and failed, in circumstances substantially the same. And in the same manner, credibility is grounded on the experience we have had, of the qualities of a witness, requisite to render his testimony more or less credible. Thus, we every day say, that some events, some arguments, some opinions, are more probable than others; that one is *highly* probable, another *scarcely* probable, another *doubtful*, another *improbable*; and we are convinced, that the testimony of Bergman is more credible than that of Paracelsus, &c.

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the degree in which they hold a witness credible, and this is better than yielding to a majority.

648. There are many quantities, the ratios of which, to other quantities, cannot be ascertained, yet approximations thereto are highly useful. Thus the ratio of the diameter of a circle to its circumference, cannot be exactly stated, yet none will deny the utility of approximations towards it.

649. The merit of painters has been deduced from the degrees of excellence which they have severally attained, in the different parts of that art, expressed in number, as *design, colouring, expression, and composition*, multiplied into each other. See Mem. of the Roy. Acad. of Paris, for 1755.

650. The principal advantages arising from a specific notation of the degrees of probability and credibility, are,

First, that it fixes the vague distinctions which we naturally make of these degrees, renders them more precise, and thus enables us to deduce conclusions, otherwise unattainable. For instance, we may conclude that, in some cases, the testimony of two doubtful witnesses
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is more credible than that of one witness of low credibility. See No. 590, &c. And that the opinions of two physicians or lawyers of inferior note, may possibly be preferable to that of one eminent in either of those professions. No. 618. And this observation may be extended to many cases, that occur in common life, unless some passion or partiality interferes; for when that happens, no certain estimation of probability can be had.

Secondly, it enables us to strike a balance betwixt opposite probabilities, or testimonies, and shew with precision, which of them is preponderant, and by how much.

Thirdly, as in a course of years we ourselves change our opinions, calculation may shew us the precise weight of the proofs or causes, that induced the change.

651. Solidity of judgment consists chiefly in the just estimation of probabilities, and when the requisite *data* are known, it is seldom that any mistake can occur; but in many cases, these are difficultly procured.

652. To help to form an estimate of the credibility of witnesses, whether known to us, or absolutely unknown, I have formed the following

following scale; which, if judged defective, may be amended by others.

<i>Unknown</i> , and of the lowest class	-	-	-	$\frac{12}{20}$
Ditto, sworn	-	-	-	$\frac{14}{20}$
<i>Unknown</i> , but of superior condition,	-	-	-	$\frac{14}{20}$
Ditto, sworn	-	-	-	$\frac{15}{20}$
<i>Known</i> and credible	-	-	-	$\frac{15}{20}$
Ditto, sworn	-	-	-	$\frac{16}{20}$
More credible	-	-	-	$\frac{16}{20}$
Sworn	-	-	-	$\frac{17}{20}$
More credible	-	-	-	$\frac{17}{20}$
Sworn	-	-	-	$\frac{18}{20}$
Still more credible	-	-	-	$\frac{18}{20}$
Sworn	-	-	-	$\frac{19}{20}$
Of the highest credibility	-	-	-	$\frac{19}{20}$

and this is not increased by an oath.

653. In affigning to any person a particular degree in this scale, it is plain, that regard should be had to his age, education, rank in life, and general character, besides the general qualifications mentioned No. 445, &c.

654. The

654. The credibility of the opinion of a professional man, is in general as his repute or situation, if fairly obtained. Yet there are numerous exceptions to this rule. Many, of the highest merit, either through bashfulness, or indolence, or contempt for certain artifices, have never acquired that celebrity, to which their acquirements entitled them. For instance, in the medical profession, the late Dr. Black; and in the legal, Serjeant Hawkins, who was named, from his want of practice, the *briefless Serjeant*.

655. But the opinions of professional men, can seldom be as credible as the testimony of a credible witness to a fact, and commonly only in very clear cases, being for the most part conjectural. Hence I estimate the opinions of persons of the highest repute, at from $\frac{16}{20}$ to $\frac{18}{20}$, and those of lower repute, at from $\frac{13}{20}$ to $\frac{16}{20}$.

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Ditto, sworn	-	-	-	$\frac{16}{20}$
More credible	-	-	-	$\frac{16}{20}$
Sworn	-	-	-	$\frac{17}{20}$
More credible	-	-	-	$\frac{17}{20}$
Sworn	-	-	-	$\frac{18}{20}$
Still more credible	-	-	-	$\frac{18}{20}$
Sworn	-	-	-	$\frac{19}{20}$
Of the highest credibility	-	-	-	$\frac{19}{20}$

and this is not increased by an oath.

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SECTION XXII.

OF THE PROBABILITY, MERIT, AND DEMERIT OF
HUMAN ACTIONS.

656. When men are free from physical constraint or restraint, their actions are the results of the actual constitution of their minds, and of the general motives that influence the human will, modified by circumstances peculiar to each case.

657. The actual constitution of the mind consists in its previous dispositions, arising, partly from natural temper, partly from education, partly from preconceived opinions, habits, company, age, observation, and experience.

658. The motives that generally influence the will, are natural instinct and passions, whether selfish or moral, benevolent or malevolent; their energies are various, in different individuals, and in all modified by the presence or distance of their objects, and the facility, or difficulty, or danger to be encountered

tered in attaining them. Distant views are, indeed, generally attributed to *reason*, in contradistinction to *passion*; yet, in reality, reason does no more than discover the importance of the object, and the means of pursuing or avoiding it; the true principle or motive of its pursuit or avoidance, is the passion it excites.

659. Motives of any particular tendency are often so complicated with those of an opposite tendency, that the agent himself hesitates, which of them he shall obey; much more must those, who attempt to conjecture what his determination shall be.

660. However, if the actual constitution of the mind, and the general habitual motives of its actions were known, the resulting determination, might in most cases be inferred, to a great degree of probability. As on a die, having 99 faces marked with an ace, and only one with a deuce, we must judge the turning up of an ace most probable.

661. This almost constant connexion of human actions, with particular known motives, has been, by many, confounded with necessity, but, in my opinion, very unjustly;
for

for a being cannot be deemed to act through necessity, whose choice is, in all cases, directed by what he himself thinks best, while there is scarce any motive, which may not, in some point of view, be thought best ; or, if to him apparently equal, the very necessity of making some choice, is sufficient to chuse in conformity to one or other.

662. And though an absolute certainty of the determination be unattainable by any but Him who reads all hearts, yet in simple cases, experience and observation inform us, that a very high degree of probability may be obtained.

663. As human actions may be traced from a knowledge of the mental constitution of the agent, and of the motives by which he is generally governed, so the motives may themselves be discovered, by a knowledge of the constitution of his mind, and of the actions produced by him ; so that any two of these being known, the third may be fairly inferred.

664. The merit of an action consists in its conformity to moral law, in opposition to all occurring difficulties, and under the guidance of proper motives.

665. Demerit

665. Demerit, on the contrary, or guilt, arises from a wilful breach of that law, through the influence of motives, of whose malignity the agent is conscious, or may and ought to discern.

666. Hence it frequently happens, that as the merit or demerit of actions depend chiefly on the motives, from whence they originate, not only the action, but also the previous mental constitution or character of the agent, and the circumjacent circumstances, should be fully considered, before the intention or motive, and consequently his guilt or innocence, can be determined.

667. In many cases, however, the act itself naturally suggests the probability of a depraved motive, and constitution of mind; and consequently requires a justification on the part of the agent, as may thus be shewn.

668. *Guilt* consists in a wilful transgression of a known moral law; a law in most cases known to all mankind; its knowledge in particular cases, may therefore be presumed, that is assumed as *certain*, until the contrary appears. In the same manner, human actions, being seldom the effects of constraint, must

be deemed *wilful*, until proved not to have been so. Now, all actions proceeding from the will of an agent duly informed, being the results of some motives, those motives that induce a wilful transgression of the moral law, must themselves be incompatible with that law, or at least be deemed so, until the contrary appears.

This subject is well illustrated by Mr. Capel Loft, in his *Law of Evidence*, vol. ii. p. 879, 4th edition; which, as *his* illustration relates to a matter of the greatest importance, and of universal concern, I shall here set it down in his own words.

“Prima facie, nothing in the general consideration of the fact at large, can justify one man’s killing another, under the protection of the same laws.

“The malice therefore, is in the fact itself, without justifiable cause shown, or a legal excuse; and this will be according to the circumstances proved, if ‘the evidence is of killing without provocation,’ (and it lies on the defendant to show such provocation as the law allows in excuse,) no particular malice, as we have seen, needs to be proved;

proved; but, if the defendant prove a provocation by assault for instance, of the deceased, the presumption against him from the act of killing, is now *rebutted*, until the prosecutor shew that such provocation was sought maliciously as a colour; so where the evidence tends to prove 'the killing an officer,' or that the party 'who killed,' was committing an unlawful act, and that death ensued to somebody on that action; or, 'if the act' appears deliberate, 'naturally' tending to the personal hurt of any one, 'and presumably to death;' in these 'several' cases the law implies the circumstance of malice, 'disprovable by various evidence, according to the general or special facts which support it;' and this implication of the law is in defence of mankind: for all *malice* ('which in the legal sense is a *disposition to do an unlawful act*,') is a secret quality of the mind: and it is the fact only that appears, and can be brought in proof; and it is from the circumstance of the fact, that a man must collect the offence of the mind, 'and the legal degrees of that offence:' now, when a man kills another, that is, *prima facie*, so ill-natured and

bloody an action, that it is presumed to be malicious, 'till the contrary be proved;' and therefore, the 'apparent' offender, to cover himself from the supposition that the law has made in tenderness to mankind, must shew some 'just necessity,' some 'provocation,' or some accident, in "justification, extenuation, or excuse of the fact;" or, if he cannot thus mollify or excuse the action, the supposition of the law remains, and he ought to be punished with certain death."

CHAPTER VIII.

SECTION I.

OF AXIOMS, MAXIMS, AND APHORISMS.

669. *Axioms* are universal propositions, whose truth, when the terms which express them are understood, is self evident.

Thus the axiom, *whatever is, is*, every one who understands the import of the words *whatsoever*, and *is*, instantly perceives to be true;

true; but these terms being abstract, their signification is not immediately perceived by children, nor by persons in a state of mental imbecility.

670. Mr. Locke, lib. iv. chap. vii. sec. 10, is partly right in denying, that they are the principles or foundations of our knowledge; for, from many of them, no conclusion can be drawn; as, for instance, from that here quoted; yet there are others, from which conclusions may fairly be deduced. Thus, if a definition of any being be agreed upon, properties included in, or excluded from that definition, may justly be inferred or denied, as the case may be, from the principle that *it is impossible to be and not to be at the same time, and in the same respect*. Thus, if it is allowed that God may be defined to be a being, infinitely perfect, and that *veracity* is a perfection, we must conclude, that veracity is ascribable to God, otherwise he would not be infinitely perfect, and consequently *would be and not be God*, which is impossible. In the same manner, the unity of God may be proved, and thus also all imperfections are excluded from his nature.

671. In *geometry*, frequent use is made of *axioms*; Euclid lays down several, and on them rests the final proof of his demonstrations.

Care must be taken, that *axioms* be properly understood. Thus, that *the whole is equal to its parts collectively taken*, is evident, when it is understood that none of these parts include the other, as is the case in continued quantity; but if any of these parts include the other, (as in numerals) it is false; thus 7 and 8 are parts of 12, but as 8 includes 7, these numbers, taken together, exceed 12, since they amount to 15.

672. *Maxims* and *aphorisms*, are also general truths, but not self evident. In *experimental sciences*, they are summaries, or final results, from numerous facts, and are highly useful, as from them, several new facts may often be deduced by analogy. In *speculative sciences*, as metaphysics, theology, morality, jurisprudence, logick, &c. they are either the principles, or the immediate and most general inferences, from the principles of those sciences. Thus in *theology*, from the principle, that veracity is one of the attributes of God,

God, it is inferred, that whatever God reveals is true; and, that *any proposition confirmed by miracles, is either mediately or immediately, (as the case may be) revealed by God*; on these maxims, both the Jewish and Christian religions are founded. So in *logick*, that *things that are in any respect the same with, or equal to another, are in the same respects the same with, or equal to each other*, is a maxim, on which all reasoning is founded; and demonstrations *ab absurdo*, on the maxim that of two contradictory propositions, if one be false, the other must be true. So in *chronology*, and *criticism*, certain *canons* or maxims are established, by the application of which, many facts are ascertained, or rejected, &c.

673, Locke also well observes, that axioms and maxims being well understood, and rendered familiar, are very convenient in ratifying and as it were sealing the conviction of some particular truths, which are shewn to agree with them, and are less familiar, and in fact not originally derived from them.*

SECTION

* In the 11th section of the chapter above quoted, he uses the word *revelation* in a new, and therefore improper sense, saying, that when we find out an idea, by whose

SECTION II.

OF SOME GENERAL DEFINITIONS.

674. To *understand*, is to discern a relation ; thus to understand words, or terms, or propositions, is to discern their signification. To understand a language, is to discern the signification of its words and idioms. A relation is *perfectly* discerned, when its subject, term, and foundation, are known ; but *imperfectly*, if only the subject and term, or only the subject and foundation are known.

675. To *know* a thing, or the truth of a proposition, is to judge it on proper motives to be true, or to be convinced of its truth. To know a science, is to discern the truths, and the foundations of those truths, which it

intervention the connexion of two others is discovered, this is a *revelation* from God, by the *voice of reason*. What he adds of revelation by the voice of the *spirit*, is mere *cant*, which, from the bigotry of the times, he was obliged to chime with ; and what he says of reason, being a revelation, he contradicts, lib. iv. chap. xviii. sec. 2.

contains.

contains. Thus, to know a fact, is to judge if it be true, either on the testimony of our senses, as having witnessed it, or by consciousness or demonstration, or on other indubitable testimony; thus I know my own perceptions by consciousness, the truth of the propositions of Euclid by demonstration, and that there was such a king as William the Conqueror, such an emperor as Augustus, &c. by indubitable testimony. Hence knowledge and certainty are nearly the same; knowledge denoting judgment or conviction, and certainty the reliance or assurance of the truth of that judgment. However, knowledge founded on any foreign testimony is *indirect*, and more commonly called *belief*; yet, may I not say, *I know the sun rose many years before I was born*, or that I had an ancestor 2000 years ago?

676. To *conceive* a thing, is to form an idea or an adequate notion of it. Thus if any thing be explained or described to me, if I can form an idea or adequate notion of it, I may say *I conceive it*. So if I read a description of London, and from that description I can form an idea of it, I may say *I conceive what sort of town it is*; but I cannot

cannot conceive a triangle, one of whose sides is equal to the other two, for I can form no idea of such a triangle.

677. These three terms are frequently used indiscriminately, in common language, and even in philosophical disquisitions; which occasions much confusion. Thus a person is said to *know* a language; whereas, it would be more proper to say, he *understands* a language. Some propositions may be imperfectly understood, which can by no means be conceived. Thus when it is said, that the world was created, the proposition may be understood, otherwise it could not be affirmed; but it cannot be conceived, as of the power by which it was effected, no adequate notion can be formed.

SECTION III.

OF GENERAL LOGICAL AND PHILOSOPHICAL MAXIMS.

678. *All terms are more or less intelligible, whose signification is more or less perfectly known.* Thus, men blind from their nativity,
may

may nevertheless form some notion, though not an idea, of light and colours; since Drs. Saunderson and Moys, who were thus circumstanced, have been enabled to give lectures on opticks, and certainly knew more of the properties of light and colours, than the generality of mankind, See 370. Thus, terms denoting *sensible* objects, or other states of the mind, known only by *consciousness*, or by *intimate conviction and reason*, as the existence of our own mind; or by *analogy*, as the existence of other minds; or of *privations*, as darkness, blindness, silence; or of *negations*, as impossibility, non-existence, annihilation, nihility or nothing: or complex terms, that denote an *unknown object, together with a known relation to a known object*, or to an unknown state of a known object, are also intelligible; thus $x+1=\sqrt[3]{2}$. Here x is an unknown quantity, and $x+1$ is a complex term: $=$ denotes the relation to the known quantity 2, as does the cubic root the unknown amount of a particular intelligible state of that complex term, or terms that denote the *unknown causes of known effects*, as *force, attraction, electrical or magnetic powers, &c.*

679. Terms

679. *Terms that denote a known fact, though connected with an unknown cause or circumstances, are perfectly intelligible, as nutrition, vegetation, secretion, electricity, magnetism, &c.*

For we cannot deny *general and well-known* facts, of which there must be some mode of causation, (nor consequently deny understanding the meaning of the terms that express such facts, together with their unknown mode of causation,) merely because we are ignorant of the immediate or general causes of those facts; or how, or in what manner, or by what degrees, or for what end, they operate; or of the preceding or concomitant circumstances. An American savage cannot understand how Europeans convey their thoughts to one another by writing, and yet many of those savages are well acquainted with that fact.

680. *Complex terms that express what is evidently repugnant, (as a round square,) are unintelligible; for the signification of the one is incompatible with the signification of the other. Such terms may be called repugnant. (So Berkeley, Min. Philos. Dialogue 7, sec. vi.) and Mem. Berl. 1789, 429.*

681. *Simple*

681. *Simple or complex terms, to which an unintelligible signification is affixed, may also be denominated unintelligible; thus the internal mould of Buffon, is a complex unintelligible term. So also the Archeus of Stahl, and the substantial forms of the peripatetics.*

Such terms may also be called *senseless*, and the *potentia animastica* of Borelli, lib. ii. de vi percussionis. See 1 Baxter 23.

682. *Complex terms that denote somewhat physically impossible, are intelligible, but not those that express a metaphysical or mathematical impossibility. Thus we understand what is meant by perpetual motion, or the philosophers stone; for the impossibility of these arises merely from their inconsistency with the laws of corporeal nature, which the Author of nature may suspend or vary. But metaphysical or mathematical impossibilities, imply a contradiction; such as a mortal and unjust God, a triangle, one of whose sides is as long as the other two, &c.; these also may be called repugnant.*

683. *Terms to which no signification, whether direct, or analogical, or relative, is affixed, are of course*

626. But if the credibilities of the opposite witnesses be *unequal*, the resulting state of the fact may be found by the formula No. 622.

With respect to contradictory Original Testimonies.

627. The credibility of these is calculated as that of contrary testimonies; the only difference is, that one must be true, and the other false, whereas contrary testimonies may be both false.

628. The method recommended by Mr. Hume, in his Essay on Miracles, p. 344, 345, for comparing and balancing contradictory testimonies, consists in deducting the *inferior* credibility from the superior; the remainder, he says, will show, how much the superior is weakened. If so, this absurdity would follow, that the credit of the most respectable witness would be destroyed by the opposition of one whose credibility is doubtful; for, suppose the credibility of the one to be $\frac{9}{10}$, and of the other only $\frac{5}{10}$, then $\frac{9-5}{10} = \frac{4}{10}$, which being
below

below $\frac{1}{2}$, denotes improbability, or incredibility. In the above case, the credit of the first physician would by such subtraction be reduced to $\frac{1}{10}$.

SECTION XIX.

OF SUCCESSIVE OR TRANSMITTED TESTIMONIES.

629. If *A* relates to me a fact, which he heard from *B*, and that *B* heard it from *C*, and that *C* heard it from *D*, and that *D* was the immediate witness of the fact, here is a fact conveyed to me through four witnesses; but there is but one witness to the fact, namely *D*. And besides this *principal* fact, there are three distinct *subordinate* facts, namely, that *D* reported it to *C*, that *C* reported it to *B*, and that *B* reported it to *A*; each of these can attest no more, than his own reception of the fact, from the next preceding witness, and of the persons through whom he was informed it was conveyed.

Hence it is plain, that the aggregate
credibility

686. *A proposition not understood, and consequently while so unintelligible, by the person to whom it is proposed, cannot be directly believed, or denied by him, but it may be believed or rejected by him indirectly, inferentially, that is, on proper extrinsic proof; for truth consists in the reality of the relation betwixt the subject and attribute of a proposition. Then if the signification of neither of them is known, it is plain their relation to each other cannot be discerned, nor consequently can the truth of the proposition be directly and explicitly believed. Yet where sufficient extrinsic reasons are adduced, for believing that the terms are intelligible to others, and not mere empty sounds, and that a relation betwixt them does exist, the proposition may be assented to, and thus may indirectly, and inferentially be believed. Thus, as Dr. Watts remarks,* if a skilful mathematician should tell a ploughman that an ellipsis is made by a section of a cone, the peasant may believe him, though he does not understand what is meant by a cone or an ellipsis. Thus also, an illiterate person who*

* P. 213.

Of each of the successive witnesses into each other; the product gives the aggregate credibility of all the witnesses.

631. As the credibilities, thus found, continually decrease, it is needless to push the calculation further than the point at which the aggregate becomes *doubtful*; that is, equal $\frac{1}{2}$: this point, if the credibility of each of the witnesses be supposed equal, (for instance $\frac{9}{10}$), is found without tedious multiplications, by dividing the given credibility by its deficiency, and multiplying the quotient into $\frac{7}{10}$; thus the original credibility being $\frac{9}{10}$, it is not rendered doubtful, until it is transmitted through six witnesses; for the deficiency of $\frac{9}{10}$ is 1. and 1) 9 (9 and $9 \times \frac{7}{10} = 6, 3$.

632. If the original testimony of each of the succeeding be $\frac{8}{10}$, it requires only a succession of three witnesses to render it doubtful; for the deficiency is 2 and 2) 8 (4 and $4 \times \frac{7}{10} = 2,88$, and in effect $\frac{8}{10} \times \frac{8}{10} \times \frac{8}{10} = \frac{512}{1000}$.

633. If the credibility of the original testimony were $\frac{99}{100}$, it would become doubtful only
by

probable, or even an improbable fact, sufficiently credible and independent on, and yet agreeing with each other, their credibility could never become dubious, from the improbability, that their agreement could arise from any thing else but the reality of the object testified.

This improbability is as the product of their deficiencies, divided by the product of the chances favourable to their credit. Thus, if the credibility of the original witnesses in each series be $\frac{8}{10}$, and if there are two collateral series of concordant witnesses, the deficiency of each original witness will be two, and the chances favourable to the credit of each, eight; the improbability of their agreement from any other cause, but the reality of the object will be $\frac{2 \times 2}{8 \times 8} = \frac{4}{64} = \frac{1}{16}$; and if there be three such series, the improbability will be $\frac{2}{64}$, &c.

SECTION XX.

OF WRITTEN TESTIMONIES.

640. Hitherto we have considered successive testimonies in the abstract, and the conclusions laid down relate chiefly to *oral* testimonies; but the credibility of testimonies committed to writing, is vastly stronger, because not only the original witness has more leisure to weigh his account, and render it more accurate, and his testimony may be preserved, without any alteration, at least one hundred years, and often three or four hundred years; but also, because within that space of time, innumerable copies of it may be taken, and if taken, it is scarce possible, that in the greater number of them, any material error can be committed, or at least, that the same should be found in all of them; if any such be committed, it would easily be corrected by reference to the original.

641. Hence if the credibility of a written testimony be $\frac{9}{10}$, the credibility of the first

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copy

copy is not barely $\frac{9}{10}$ of that $\frac{9}{10}$, but approaches very nearly to the credibility of the first testimony; and the reason is, that the existence of the first testimony being permanent for a number of years, its agreement with the copy may be frequently examined and ascertained, and if important, the comparison will undoubtedly be often made; whereas oral testimony being fugitive, its existence can be proved only by the credibility of the second witness, and the existence of this, only by a third witness, &c. The credibility of the copy is, therefore, to be deduced from the probability of its agreement with the original, which in material points, except party zeal interferes, is indefinitely great.

642. If there are two or more original written testimonies, concordant in all material points, and copies are taken of each, and these copies are found to agree, at least in substance, their credibility with respect to the object testified, is nearly equal to the concordant original testimonies: the same observation extends to all the successive copies, and the more numerous they are, the more they strengthen each other.

643. The

643. The true reason, why the copy of a deed, whose conformity with the original is well attested, is refused to be received, as a proof in our courts of justice is, that withholding the original, when it can be produced, induces some suspicion of fraud; for if the original be proved to be lost, or accidentally destroyed, the production of a copy is allowed.

Of Illusive Probability.

644. Under this head I comprehend every imaginary probability, derived from sources that have no connexion with the reality of the object supposed probable, originating from *hope, fear, hatred*, or some other strong passion. That such illusions should exist, is indeed surprising, yet daily experience may fully convince us, that we most readily believe what we wish to be true; or, at least, we believe it more firmly than we should, if we were less interested in its truth, or had wished it to be false. We find a degree of pleasure, in contemplating the object and the reasons favourable to its existence, and of pain, in

contemplating those that destroy this impression. Hence, these last, are either overlooked, or slightly surveyed; the former of course prevail, and the object appears probable.

645. On the other hand, when a danger apprehended is inconsiderable, and our imagination alarmed, though its probability may be remote, or inconsiderable, fear collects, and attaches our attention to the unfavourable chances only; we become incapable of balancing them with the favourable; and the danger is consequently magnified much above its real limits. Under the dominion, therefore, of intruding passions, we can form no true estimate of probability.*

* See 1 Search, p. 291, and 328; and Leland Deist. Writen, Letter XI. p. 176.

SECTION XXI.

OF THE POSSIBILITY OF DENOTING THE DEGREES
OF PROBABILITY AND CREDIBILITY BY NUMBERS.
RULES FOR THE NOTATION OF CREDIBILITIES, AND
THE ADVANTAGES RESULTING FROM SUCH NO-
TATION.

646. It is allowed, that the chances on dice, or cards, and consequently the probability of any event relating to them, may be ascertained with the greatest accuracy, as the numbers, favourable and unfavourable, are accurately known; but it is thought by many, that the estimation of the events of common life, and of the credibility of witnesses in numbers, is impossible; because, we have no standard measure, wherewith to compare them, no units, from whose repetition a number can arise; consequently, that all precise estimation must be arbitrary, and therefore useless.

647. Nevertheless, it should be observed, that all measures were originally arbitrary, and became fixed, only by convention and
Z 4 agreement.

agreement. Thus a *foot* is a conventional quantity, arbitrarily fixed upon, and without any determinate foundation in nature, and therefore different in different countries. The same may be said of *weights*, and of measures of capacity, as *pints* or *gallons*; and of measures of qualities, as of *heat*, *cold*, *wet*, *dry*, &c.: in the same manner, probability and credibility are real, though invisible quantities, of which there are different degrees, which have their foundation in nature; for probability is founded on the number of cases in which an event happened, compared with the whole number in which it happened and failed, in circumstances substantially the same. And in the same manner, credibility is grounded on the experience we have had, of the qualities of a witness, requisite to render his testimony more or less credible. Thus, we every day say, that some events, some arguments, some opinions, are more probable than others; that one is *highly* probable, another *scarcely* probable, another *doubtful*, another *improbable*; and we are convinced, that the testimony of Bergman is more credible than that of Paracelsus, &c.

Still

Still it may be replied, " that of sensible quantities or qualities we may have sensible measures, but of invisible quantities, such as the different degrees of probability respecting human events, or of credibility, knowledge, integrity, &c. we can have no determinate measure, by which to estimate their inequality." Yet the contrary is well known; the ratio which the value of any thing bears to the value of any other thing, is an invisible quantity, which is settled, merely by the estimation of the parties concerned; thus, the value of a horse may be deemed *superior* or *equivalent* to that of a certain number of cows or sheep, &c. a number settled by estimation. For the convenience of all parties, this value is estimated by certain quantities of coin, and thus money becomes the standard, to which all valuation is referred. Now, the different degrees of probability, are equally referable, and, in fact, are daily referred to that standard, by insurers, whether of lives, or houses, or voyages, &c. grounded on experience of the number of times the event insured has happened, or failed, in a certain number of years. A jury may settle
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the degree in which they hold a witness credible, and this is better than yielding to a majority.

648. There are many quantities, the ratios of which, to other quantities, cannot be ascertained, yet approximations thereto are highly useful. Thus the ratio of the diameter of a circle to its circumference, cannot be exactly stated, yet none will deny the utility of approximations towards it.

649. The merit of painters has been deduced from the degrees of excellence which they have severally attained, in the different parts of that art, expressed in number, as *design, colouring, expression, and composition*, multiplied into each other. See Mem. of the Roy. Acad. of Paris, for 1755.

650. The principal advantages arising from a specific notation of the degrees of probability and credibility, are,

First, that it fixes the vague distinctions which we naturally make of these degrees, renders them more precise, and thus enables us to deduce conclusions, otherwise unattainable. For instance, we may conclude that, in some cases, the testimony of two doubtful witnesses

is more credible than that of one witness of low credibility. See No. 590, &c. And that the opinions of two physicians or lawyers of inferior note, may possibly be preferable to that of one eminent in either of those professions. No. 618. And this observation may be extended to many cases, that occur in common life, unless some passion or partiality interferes; for when that happens, no certain estimation of probability can be had.

Secondly, it enables us to strike a balance betwixt opposite probabilities, or testimonies, and shew with precision, which of them is preponderant, and by how much.

Thirdly, as in a course of years we ourselves change our opinions, calculation may shew us the precise weight of the proofs or causes, that induced the change.

651. Solidity of judgment consists chiefly in the just estimation of probabilities, and when the requisite *data* are known, it is seldom that any mistake can occur; but in many cases, these are difficultly procured.

652. To help to form an estimate of the credibility of witnesses, whether known to us, or absolutely unknown, I have formed the following

following scale; which, if judged defective, may be amended by others.

<i>Unknown</i> , and of the lowest class	$\frac{12}{20}$
Ditto, sworn - - -	$\frac{14}{20}$
<i>Unknown</i> , but of superior condition,	$\frac{14}{20}$
Ditto, sworn - - -	$\frac{15}{20}$
<i>Known</i> and credible - - -	$\frac{15}{20}$
Ditto, sworn - - -	$\frac{16}{20}$
More credible - - -	$\frac{16}{20}$
Sworn - - -	$\frac{17}{20}$
More credible - - -	$\frac{17}{20}$
Sworn - - -	$\frac{18}{20}$
Still more credible - - -	$\frac{18}{20}$
Sworn - - -	$\frac{19}{20}$
Of the highest credibility -	$\frac{19}{20}$

and this is not increased by an oath.

653. In affigning to any person a particular degree in this scale, it is plain, that regard should be had to his age, education, rank in life, and general character, besides the general qualifications mentioned No. 445, &c.

654. The

654. The credibility of the opinion of a professional man, is in general as his repute or situation, if fairly obtained. Yet there are numerous exceptions to this rule. Many, of the highest merit, either through bashfulness, or indolence, or contempt for certain artifices, have never acquired that celebrity, to which their acquirements entitled them. For instance, in the medical profession, the late Dr. Black ; and in the legal, Serjeant Hawkins, who was named, from his want of practice, the *briefless Serjeant*.

655. But the opinions of professional men, can seldom be as credible as the testimony of a credible witness to a fact, and commonly only in very clear cases, being for the most part conjectural. Hence I estimate the opinions of persons of the highest repute, at from $\frac{16}{20}$ to $\frac{18}{20}$, and those of lower repute, at from $\frac{13}{20}$ to $\frac{16}{20}$.

626. But if the credibilities of the opposite witnesses be *unequal*, the resulting state of the fact may be found by the formula No. 622.

With respect to contradictory Original Testimonies.

627. The credibility of these is calculated as that of contrary testimonies; the only difference is, that one must be true, and the other false, whereas contrary testimonies may be both false.

628. The method recommended by Mr. Hume, in his Essay on Miracles, p. 344, 345, for comparing and balancing contradictory testimonies, consists in deducting the *inferior* credibility from the superior; the remainder, he says, will show, how much the superior is weakened. If so, this absurdity would follow, that the credit of the most respectable witness would be destroyed by the opposition of one whose credibility is doubtful; for, suppose the credibility of the one to be $\frac{9}{10}$, and of the other only $\frac{5}{10}$, then $\frac{9-5}{10} = \frac{4}{10}$, which being
below

below $\frac{1}{2}$, denotes improbability, or incredibility. In the above case, the credit of the first physician would by such subtraction be reduced to $\frac{1}{10}$.

SECTION XIX.

OF SUCCESSIVE OR TRANSMITTED TESTIMONIES.

629. If A relates to me a fact, which he heard from B , and that B heard it from C , and that C heard it from D , and that D was the immediate witness of the fact, here is a fact conveyed to me through four witnesses; but there is but one witness to the fact, namely D . And besides this *principal* fact, there are three distinct *subordinate* facts, namely, that D reported it to C , that C reported it to B , and that B reported it to A ; each of these can attest no more, than his own reception of the fact, from the next preceding witness, and of the persons through whom he was informed it was conveyed.

Hence it is plain, that the aggregate
credibility

credibility of these witnesses cannot be calculated like that of simultaneous witnesses, by multiplying the chances, favourable to the truth of each, into each other, as in No. 583; for there all the testimonies were supposed to bear upon one fact, but here they all relate to different facts, namely, their several receptions of the principal fact. Let us suppose the *general* credibility of each of these witnesses be known, and to be, for instance, $\frac{9}{10}$, then I have $\frac{9}{10}$ of a certainty, that *A* received the report from *B*; but though the general credibility of *B* is also supposed to be $\frac{9}{10}$, yet that he received this report from *C*, I have only the probability of the $\frac{9}{10}$ which I received from *A*, that is, $\frac{9}{10}$ of *B*'s $\frac{9}{10}$. For, if *B* made the report immediately to myself, I could have no greater probability of its truth, than $\frac{9}{10}$ by the supposition; and it were absurd to suppose, I could have the same portion of certainty, when I knew it not by my own senses, as if I had so received it.

630. Hence, the rule is to multiply the fractions, indicating the general credibilities
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of each of the successive witnesses into each other; the product gives the aggregate credibility of all the witnesses.

631. As the credibilities, thus found, continually decrease, it is needless to push the calculation further than the point at which the aggregate becomes *doubtful*; that is, equal $\frac{1}{2}$: this point, if the credibility of each of the witnesses be supposed equal, (for instance $\frac{9}{10}$,) is found without tedious multiplications, by dividing the given credibility by its deficiency, and multiplying the quotient into $\frac{7}{10}$; thus the original credibility being $\frac{9}{10}$, it is not rendered doubtful, until it is transmitted through six witnesses; for the deficiency of $\frac{9}{10}$ is 1. and 1) 9 (9 and $9 \times \frac{7}{10} = 6, 3$.

632. If the original testimony of each of the succeeding be $\frac{8}{10}$, it requires only a succession of three witnesses to render it doubtful; for the deficiency is 2 and 2) 8 (4 and $4 \times \frac{7}{10} = 2,88$, and in effect $\frac{8}{10} \times \frac{8}{10} \times \frac{8}{10} = \frac{512}{1000}$.

633. If the credibility of the original testimony were $\frac{99}{100}$, it would become doubtful only
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by 72 transmissions, and if it were $\frac{999}{1000}$, it would require a succession of 699 witnesses, to render the credibility doubtful.

634. If in the relation of *modern* facts, the original witness is not named or unknown, and the fact such as should not be presumed, or is destitute of internal probability, it seems to me, that the succeeding relaters of the fact are not entitled to any credit.

635. But it seems otherwise as to the relaters of antient facts, as many antient testimonies are irrecoverably lost, in which the original witness might have been mentioned.

636. If any of the successive witnesses are of dubious credibility, or through *credulity* unworthy of credit, the whole chain is interrupted, and the succeeding witnesses destitute of support.

637. If any of the successive witnesses should vary from the preceding, or the original testimony, by the addition or subtraction of some circumstances, yet this does not alter his credibility as to the substance of the fact. See No. 602, &c.

638. From the weakness and continual decrease of successive testimony, some have
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inferred, that even the object testified might become *dubious*, or even improbable; but falsely; the utmost that can be inferred is, that it may be left destitute of *external* testimonial proof, but its *internal probability* remains unaltered; and in many cases, this is sufficient to prove its existence. This always happens, when the present state of any object is evidently the consequence of some past fact. Thus, if we had no human testimony of an universal deluge, the confused heaps of marine shells frequently found in all countries, on the summit of high mountains, as well as a few feet under the actual surface of the earth, would sufficiently prove it. If we had no account of the conquest of Gaul by the Franks, or of Spain by the Moors, yet the mixture of Teutonic words in the modern French language, and of Arabic in the Spanish, would sufficiently prove these facts, to say nothing of medals and other monuments.

639. The above observations relate to a *single* chain or series of successive witnesses; but if there were two or more *collateral* series of successive witnesses of an indifferent, or

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probable, or even an improbable fact, sufficiently credible and independent on, and yet agreeing with each other, their credibility could never become dubious, from the improbability, that their agreement could arise from any thing else but the reality of the object testified. This improbability is as the product of their deficiencies, divided by the product of the chances favourable to their credit. Thus, if the credibility of the original witnesses in each series be $\frac{8}{10}$, and if there are two collateral series of concordant witnesses, the deficiency of each original witness will be two, and the chances favourable to the credit of each, eight; the improbability of their agreement from any other cause, but the reality of the object will be $\frac{2 \times 2}{8 \times 8} = \frac{4}{64} = \frac{1}{16}$; and if there be three such series, the improbability will be $\frac{1}{64}$, &c.

SECTION XX.

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640. Hitherto we have considered successive testimonies in the abstract, and the conclusions laid down relate chiefly to *oral* testimonies; but the credibility of testimonies committed to writing, is vastly stronger, because not only the original witness has more leisure to weigh his account, and render it more accurate, and his testimony may be preserved, without any alteration, at least one hundred years, and often three or four hundred years; but also, because within that space of time, innumerable copies of it may be taken, and if taken, it is scarce possible, that in the greater number of them, any material error can be committed, or at least, that the same should be found in all of them; if any such be committed, it would easily be corrected by reference to the original.

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First, that it fixes the vague distinctions which we naturally make of these degrees, renders them more precise, and thus enables us to deduce conclusions, otherwise unattainable. For instance, we may conclude that, in some cases, the testimony of two doubtful witnesses

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Ditto, sworn	-	-	-	$\frac{16}{20}$
More credible	-	-	-	$\frac{16}{20}$
Sworn	-	-	-	$\frac{17}{20}$
More credible	-	-	-	$\frac{17}{20}$
Sworn	-	-	-	$\frac{18}{20}$
Still more credible	-	-	-	$\frac{18}{20}$
Sworn	-	-	-	$\frac{19}{20}$
Of the highest credibility	-	-	-	$\frac{19}{20}$

and this is not increased by an oath.

653. In assigning to any person a particular degree in this scale, it is plain, that regard should be had to his age, education, rank in life, and general character, besides the general qualifications mentioned No. 445, &c.

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SECTION XXII.

OF THE PROBABILITY, MERIT, AND DEMERIT OF
HUMAN ACTIONS.

656. When men are free from physical constraint or restraint, their actions are the results of the actual constitution of their minds, and of the general motives that influence the human will, modified by circumstances peculiar to each case.

657. The actual constitution of the mind consists in its previous dispositions, arising, partly from natural temper, partly from education, partly from preconceived opinions, habits, company, age, observation, and experience.

658. The motives that generally influence the will, are natural instinct and passions, whether selfish or moral, benevolent or malevolent; their energies are various, in different individuals, and in all modified by the presence or distance of their objects, and the facility, or difficulty, or danger to be encountered

tered in attaining them. Distant views are, indeed, generally attributed to *reason*, in contradistinction to *passion*; yet, in reality, reason does no more than discover the importance of the object, and the means of pursuing or avoiding it; the true principle or motive of its pursuit or avoidance, is the passion it excites.

659. Motives of any particular tendency are often so complicated with those of an opposite tendency, that the agent himself hesitates, which of them he shall obey; much more must those, who attempt to conjecture what his determination shall be.

660. However, if the actual constitution of the mind, and the general habitual motives of its actions were known, the resulting determination, might in most cases be inferred, to a great degree of probability. As on a die, having 99 faces marked with an ace, and only one with a deuce, we must judge the turning up of an ace most probable.

661. This almost constant connexion of human actions, with particular known motives, has been, by many, confounded with necessity, but, in my opinion, very unjustly;
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for a being cannot be deemed to act through necessity, whose choice is, in all cases, directed by what he himself thinks best, while there is scarce any motive, which may not, in some point of view, be thought best ; or, if to him apparently equal, the very necessity of making some choice, is sufficient to chuse in conformity to one or other.

662. And though an absolute certainty of the determination be unattainable by any but Him who reads all hearts, yet in simple cases, experience and observation inform us, that a very high degree of probability may be obtained.

663. As human actions may be traced from a knowledge of the mental constitution of the agent, and of the motives by which he is generally governed, so the motives may themselves be discovered, by a knowledge of the constitution of his mind, and of the actions produced by him ; so that any two of these being known, the third may be fairly inferred.

664. The merit of an action consists in its conformity to moral law, in opposition to all occurring difficulties, and under the guidance of proper motives.

665. Demerit

665. Demerit, on the contrary, or guilt, arises from a wilful breach of that law, through the influence of motives, of whose malignity the agent is conscious, or may and ought to discern.

666. Hence it frequently happens, that as the merit or demerit of actions depend chiefly on the motives, from whence they originate, not only the action, but also the previous mental constitution or character of the agent, and the circumjacent circumstances, should be fully considered, before the intention or motive, and consequently his guilt or innocence, can be determined.

667. In many cases, however, the act itself naturally suggests the probability of a depraved motive, and constitution of mind; and consequently requires a justification on the part of the agent, as may thus be shewn.

668. *Guilt* consists in a wilful transgression of a known moral law; a law in most cases known to all mankind; its knowledge in particular cases, may therefore be presumed, that is assumed as *certain*, until the contrary appears. In the same manner, human actions, being seldom the effects of constraint, must

be deemed *wilful*, until proved not to have been so. Now, all actions proceeding from the will of an agent duly informed, being the results of some motives, those motives that induce a wilful transgression of the moral law, must themselves be incompatible with that law, or at least be deemed so, until the contrary appears.

This subject is well illustrated by Mr. Capot Loft, in his *Law of Evidence*, vol. ii. p. 879, 4th edition; which, as *his* illustration relates to a matter of the greatest importance, and of universal concern, I shall here set it down in his own words.

“Prima facie, nothing in the general consideration of the fact at large, can justify one man’s killing another, under the protection of the same laws.

“The malice therefore, is in the fact itself, without justifiable cause shown, or a legal excuse; and this will be according to the circumstances proved, if ‘the evidence is of killing without provocation,’ (and it lies on the defendant to show such provocation as the law allows in excuse,) no particular malice, as we have seen, needs to be proved;

proved ; but, if the defendant prove a provocation by assault for instance, of the deceased, the presumption against him from the act of killing, is now *rebutted*, until the prosecutor shew that such provocation was sought maliciously as a colour ; so where the evidence tends to prove ‘ the killing an officer,’ or that the party ‘ who killed,’ was committing an unlawful act, and that death ensued to somebody on that action ; or, ‘ if the act’ appears deliberate, ‘ naturally’ tending to the personal hurt of any one, ‘ and presumably to death ;’ in these ‘ several’ cases the law implies the circumstance of malice, ‘ disproveable by various evidence, according to the general or special facts which support it ;’ and this implication of the law is in defence of mankind : for all *malice* (‘ which in the legal sense is a *disposition to do an unlawful act,*’) is a secret quality of the mind : and it is the fact only that appears, and can be brought in proof ; and it is from the circumstance of the fact, that a man must collect the offence of the mind, ‘ and the legal degrees of that offence :’ now, when a man kills another, that is, *prima facie*, so ill-natured and

bloody an action, that it is presumed to be malicious, 'till the contrary be proved;' and therefore, the 'apparent' offender, to cover himself from the supposition that the law has made in tenderness to mankind, must shew some 'just necessity,' some 'provocation,' or some accident, in "justification, extenuation, or excuse of the fact;" or, if he cannot thus mollify or excuse the action, the supposition of the law remains, and he ought to be punished with certain death."

CHAPTER VIII.

SECTION I.

OF AXIOMS, MAXIMS, AND APHORISMS.

669. *Axioms* are universal propositions, whose truth, when the terms which express them are understood, is self evident.

Thus the axiom, *whatever is, is*, every one who understands the import of the words *whatsoever*, and *is*, instantly perceives to be true;

true; but these terms being abstract, their signification is not immediately perceived by children, nor by persons in a state of mental imbecility.

670. Mr. Locke, lib. iv. chap. vii. sec. 10, is partly right in denying, that they are the principles or foundations of our knowledge; for, from many of them, no conclusion can be drawn; as, for instance, from that here quoted; yet there are others, from which conclusions may fairly be deduced. Thus, if a definition of any being be agreed upon, properties included in, or excluded from that definition, may justly be inferred or denied, as the case may be, from the principle that *it is impossible to be and not to be at the same time, and in the same respect*. Thus, if it is allowed that God may be defined to be a being, infinitely perfect, and that *veracity* is a perfection, we must conclude, that veracity is ascribable to God, otherwise he would not be infinitely perfect, and consequently *would be and not be God*, which is impossible. In the same manner, the unity of God may be proved, and thus also all imperfections are excluded from his nature.

671. In *geometry*, frequent use is made of axioms; Euclid lays down several, and on them rests the final proof of his demonstrations.

Care must be taken, that axioms be properly understood. Thus, that *the whole is equal to its parts collectively taken*, is evident, when it is understood that none of these parts include the other, as is the case in continued quantity; but if any of these parts include the other, (as in numerals) it is false; thus 7 and 8 are parts of 12, but as 8 includes 7, these numbers, taken together, exceed 12, since they amount to 15.

672. *Maxims* and *aphorisms*, are also general truths, but not self evident. In *experimental sciences*, they are summaries, or final results, from numerous facts, and are highly useful, as from them, several new facts may often be deduced by analogy. In *speculative sciences*, as metaphysics, theology, morality, jurisprudence, logick, &c. they are either the principles, or the immediate and most general inferences, from the principles of those sciences. Thus in *theology*, from the principle, that veracity is one of the attributes of God,

God, it is inferred, that whatever God reveals is true; and, that *any proposition confirmed by miracles, is either mediately or immediately, (as the case may be) revealed by God*; on these maxims, both the Jewish and Christian religions are founded. So in *logick*, that *things that are in any respect the same with, or equal to another, are in the same respects the same with, or equal to each other*, is a maxim, on which all reasoning is founded; and demonstrations *ab absurdo*, on the maxim that of two contradictory propositions, if one be false, the other must be true. So in *chronology*, and *criticism*, certain *canons* or maxims are established, by the application of which, many facts are ascertained, or rejected, &c.

673, Locke also well observes, that axioms and maxims being well understood, and rendered familiar, are very convenient in ratifying; and as it were sealing the conviction of some particular truths, which are shewn to agree with them, and are less familiar, and in fact not originally derived from them.*

SECTION

* In the 11th section of the chapter above quoted, he uses the word *revelation* in a new, and therefore improper sense, saying, that when we find out an idea, by whose

SECTION II.

OF SOME GENERAL DEFINITIONS.

674. To *understand*, is to discern a relation ; thus to understand words, or terms, or propositions, is to discern their signification. To understand a language, is to discern the signification of its words and idioms. A relation is *perfectly* discerned, when its subject, term, and foundation, are known ; but *imperfectly*, if only the subject and term, or only the subject and foundation are known.

675. To *know* a thing, or the truth of a proposition, is to judge it on proper motives to be true, or to be convinced of its truth. To know a science, is to discern the truths, and the foundations of those truths, which it

intervention the connexion of two others is discovered, this is a *revelation* from God, by the *voice of reason*. What he adds of revelation by the voice of the *spirit*, is mere cant, which, from the bigotry of the times, he was obliged to chime with ; and what he says of reason, being a revelation, he contradicts, lib. iv. chap. xviii. sec. 2.

contains.

contains. Thus, to know a fact, is to judge if it be true, either on the testimony of our senses, as having witnessed it, or by consciousness or demonstration, or on other indubitable testimony; thus I know my own perceptions by consciousness, the truth of the propositions of Euclid by demonstration, and that there was such a king as William the Conqueror, such an emperor as Augustus, &c. by indubitable testimony. Hence knowledge and certainty are nearly the same; knowledge denoting judgment or conviction, and certainty the reliance or assurance of the truth of that judgment. However, knowledge founded on any foreign testimony is *indirect*, and more commonly called *belief*; yet, may I not say, *I know the sun rose many years before I was born*, or that I had an ancestor 2000 years ago?

676. To *conceive* a thing, is to form an idea or an adequate notion of it. Thus if any thing be explained or described to me, if I can form an idea or adequate notion of it, I may say, *I conceive it*. So if I read a description of London, and from that description I can form an idea of it, I may say I conceive what sort of town it is; but I cannot

cannot conceive a triangle, one of whose sides is equal to the other two, for I can form no idea of such a triangle.

677. These three terms are frequently used indiscriminately, in common language, and even in philosophical disquisitions; which occasions much confusion. Thus a person is said to *know* a language; whereas, it would be more proper to say, he *understands* a language. Some propositions may be imperfectly understood, which can by no means be conceived. Thus when it is said, that the world was created, the proposition may be understood, otherwise it could not be affirmed; but it cannot be conceived, as of the power by which it was effected, no adequate notion can be formed.

SECTION III.

OF GENERAL LOGICAL AND PHILOSOPHICAL MAXIMS.

678. *All terms are more or less intelligible, whose signification is more or less perfectly known.* Thus, men blind from their nativity,
may

776. Thefts could not be criminal in Sparta, where they were allowed by a law assented to by the people themselves.

777. The destruction of aged parents, by some American savages, was not the result of want of natural affection, but of absolute necessity, as during the absence of the younger part of their families in providing food, without which all must perish, the aged and infirm could not defend themselves against wild beasts, and therefore demanded a sudden death, as a less cruel termination of their misery. Even among ourselves I have known persons seized with a hydrophobia stifled between two feather beds, to terminate their sufferings.

778. Various other enormities, enumerated by Sextus Empyricus,* evidently without any attention to modifying circumstances, and with the systematic view of rendering all principles, whether of reasoning or morality, problematical, and also by Puffendorf,† are unsupported by any proper testimony, and therefore wholly improbable. That those col-

* Lib. iii. chap. xxiii.

† Lib. ii. chap. iii. sec. 8.

679. *Terms that denote a known fact, though connected with an unknown cause or circumstances, are perfectly intelligible, as nutrition, vegetation, secretion, electricity, magnetism, &c.*

For we cannot deny *general and well-known* facts, of which there must be some mode of causation, (nor consequently deny understanding the meaning of the terms that express such facts, together with their unknown mode of causation,) merely because we are ignorant of the immediate or general causes of those facts; or how, or in what manner, or by what degrees, or for what end, they operate; or of the preceding or concomitant circumstances. An American savage cannot understand how Europeans convey their thoughts to one another by writing, and yet many of those savages are well acquainted with that fact.

680. *Complex terms that express what is evidently repugnant, (as a round square,) are unintelligible; for the signification of the one is incompatible with the signification of the other. Such terms may be called repugnant. (So Berkeley, Min. Philos. Dialogue 7, sec. vi.) and Mem. Berl. 1789, 429.*

681. *Simple*

681. *Simple or complex terms, to which an unintelligible signification is affixed, may also be denominated unintelligible; thus the internal mould of Buffon, is a complex unintelligible term. So also the Archeus of Stahl, and the substantial forms of the peripatetics.*

Such terms may also be called *senseless*, and the *potentia animastica* of Borelli, lib. ii. de vi percussionis. See 1 Baxter 23.

682. *Complex terms that denote somewhat physically impossible, are intelligible, but not those that express a metaphysical or mathematical impossibility. Thus we understand what is meant by perpetual motion, or the philosophers stone; for the impossibility of these arises merely from their inconsistency with the laws of corporeal nature, which the Author of nature may suspend or vary. But metaphysical or mathematical impossibilities, imply a contradiction; such as a mortal and unjust God, a triangle, one of whose sides is as long as the other two, &c.; these also may be called repugnant.*

683. *Terms to which no signification, whether direct, or analogical, or relative, is affixed, are of course*

course unintelligible, and may be called senseless, as Blyre.

684. *A proposition, whose extremes (that is, whose subject and predicate) are intelligible, may be either true or false, intelligible, or unintelligible.* Thus a proposition asserting that men are mortal, is true, though they may be rendered immortal by Divine Power; and so a proposition asserting a natural or physical impossibility is false; as that a dead man may be restored to life, by barely commanding him to rise; though, by supernatural power, this may be effected: but a proposition asserting what is clearly discerned, to be either metaphysically or mathematically impossible, seems to me to be, not only inconceivable, but also unintelligible, as that *God is unjust*, or that *he is the author of moral evil*. Though the terms expressing the subject and predicate, are perfectly intelligible; and the reason is, that their connexion cannot be understood, as they exclude, and are incompatible with each other; and their connexion being utterly unintelligible, the proposition must be so too; as to an affirmative proposition, a copula or connexion is essentially requisite: without that, it is not

testimony of their senses. Yet Doctor Robinson informs us,* “ that the same fables that
 “ were current in the ancient continent, have
 “ been revived with respect to the new
 “ world, and America has been peopled with
 “ human beings of monstrous and fantastic
 “ appearance. The inhabitants of certain
 “ provinces have been described to be pigmies,
 “ of three feet high; those of others to be
 “ giants of an enormous size. Some travel-
 “ lers published accounts of people with only
 “ one eye; others pretended to have disco-
 “ vered men without heads, whose eyes and
 “ mouths were planted in their breasts. The
 “ variety of nature is indeed so great, that it is
 “ presumptuous to set bounds to her fertility,
 “ and reject indiscriminately every relation
 “ that is not perfectly consonant to our li-
 “ mited observation and experience; but the
 “ other extreme of yielding an hasty assent on
 “ the slightest evidence to whatever has the
 “ appearance of being strange and marvellous,
 “ is no less unbecoming a philosopher; as in
 “ every period men are more apt to be be-

* History of America, vol. ii. p. 54. Dub. ed.

"trayed into errors by their weakness in
 "believing too much, than by their arrogance
 "in believing too little. In proportion as
 "science extends, the wonders that amused
 "ages of ignorance disappear; the tales of
 "credulous travellers are forgotten; and the
 "monsters they describe have been searched
 "for in vain."

Hence it is matter of no small surprise, that
 the sage Locke should credit tales just as
 absurd, and on their authority ascribe moral
 sentiments merely to education and custom.
 It is true, his assertion relates only to the *innateness* of moral *principles*; and if principles
 be taken for abstract propositions, his assertion
 is certainly true; for the abstract proposition
 cannot precede the sentiments which give
 birth to it. But these sentiments are felt at the
 very idea of injustice in simple cases. Savage
 tribes were assuredly better known to Aris-
 totle, who lived at a period when the greater
 part of Europe was inhabited by savages,
 than they can possibly be to us; and yet he
 acknowledges, *that by a kind of natural divi-*
nation, as he called it, all mankind distinguish,
generally, what is just from what is unjust, in-
dependently

Thus in the proposition *some being is unoriginated*, the term *being* is intelligible; so also is the predicate *unoriginated*; and though the intrinsic foundation of the relation that connects them, is imperfectly intelligible, yet we know such relation to exist; for the truth of the proposition has been demonstrated *a priori* and indirectly by Dr. Hamilton, who shews that a proposition contradicting it, is necessarily false, since if no being was unoriginated, no being whatsoever could now exist; and it has evermore been demonstrated *a posteriori*; but the origination of all created beings is perfectly intelligible, as they are the terms of the relation of infinite power, which requires no subject to act upon, otherwise it would not be infinite; consequently *creation* is perfectly intelligible, though inconceivable, as it is not analogous to any of those effects with which we are acquainted.

685.^b But a fact or doctrine inconceivable, and also destitute of proof, cannot be admitted. (Proofs may be either direct or indirect), thus the causation or power of any creature cannot be admitted, being unintelligible and destitute of proof.

greatest abilities. In fact, most of these ancient opinions were built on mere abstract political reasoning, and not on the supposed absence of moral sentiments.

782. The general conclusion from these considerations is, that compliance with the simple and primary dictates of the moral law, has ever been approved by all tribes and associations of mankind, while in a state of peace, and their violation condemned and attended with remorse, unless overruled by superstition; which originating in the delusive phantoms of imagination, can afford no excuse to its abject and no less criminal votaries.

783. As the enormities of savage tribes have been ascribed to their supposed ignorance of the moral law, so the criminality of many laws, customs, and practices, of civilized nations, has, in a subsequent and more improved period of human reason, met with advocates, who, from party attachment, have endeavoured, if not to justify, at least to palliate and excuse these excesses, by reason of their extensive prevalence in the ages which they disgraced.

784. Thus

614. If both assertions were *particular*, as that *some were put to death, and some not*, they may be both true, or one may be true and the other false, though incompletely. Thus, if all were massacred, it were false that some were not massacred, and the assertion that some were massacred would be true, but incompletely.

With respect to Indifferent and Neutral Facts.

615. *General* assertions of two witnesses of *equal credibility*, contrary to each other, destroy each other, and no judgment can be passed upon them.

616. But if their *credibility be unequal*, the testimony of the most credible of the two witnesses, is diminished by the opposition of another, though less credible. And to find to what degree, let the chances favourable to the credibility of the most credible, be multiplied into the deficiencies of the least credible, and let this product be the *numerator* of the fraction; then let the deficiencies of the most credible, be multiplied into the chances favourable to the credit of the less credible or

the two witnesses, and let both these products, added to each other, form the *denominator* of the fraction that exhibits the remaining credibility of the most credible of the two witnesses.

As in the following formula,* the separate probability of each of the two witnesses being estimated and marked.

Let the chances favourable to the credit of the most credible of the two witnesses be a , and his deficiency $=a'$;

Let the chances favourable to the credit of the less credible of the two witnesses $=b$, and his deficiency $=b'$;

Then $\frac{ab'}{ab'+a'b}$ = the credibility remaining to the most credible of the two witnesses.

To find how much the credibility of the testimony of the *less credible* of the two witnesses is diminished by the opposition of the *most credible*, the formula is $\frac{ba'}{ba'+ba}$.

617. Thus if one attending physician says his patient labours under a disorder in the lungs, and another, of lower repute, asserts the

* See 1 Lofft's Gilbert on Evidence, p. 294, &c.

disorder

disorder to be seated in the liver ; here is an *indifferent* fact ; for, to all unskilled in medicine, one appears as probable as the other ; and the assertions are contrary, though not contradictory, for both may be false.

Then let the credibility of the first, whom I shall suppose the most credible, $= \frac{9}{10}$, and that of the least credible $\frac{8}{10}$; then the chances favourable to the assertion of the first physician are nine, and those unfavourable to that of the second physician $= 2$; then $9 \times 2 = 18$ is the numerator of the fraction. The chances favourable to the assertion of the second physician are 8, and the deficiency of the first physician $= 1$, and $8 \times 1 = 8$; then $\frac{18}{18+8} = \frac{18}{26}$, is the remaining credibility of the assertion of the first physician $= \frac{9}{13}$; so that his credit, by means of the opposition, is on this occasion considerably reduced, viz. from $\frac{9}{10}$ to nearly $\frac{7}{10}$. And by the second formula, the credit of the testimony of the second physician, is, by the opposition of the first, reduced to $\frac{4}{13}$, for $\frac{8 \times 1}{8 \times 1 + 2 \times 9} = \frac{8}{8+18} = \frac{8}{26} = \frac{4}{13}$, and consequently below credibility.

Y 4

618. If

618. If in the case of the physicians above mentioned, the assertion of the first physician were opposed by the *concordant* assertions of two physicians, whose respective credibilities were $\frac{8}{10}$, we must find the combined credibility of the concordant assertions, as in No. 583, and then compare the result with the credibility of the first physician.

Now the combined credibility is $8 \times 8 = 64$, and $2 \times 2 = 4$, then we have $\frac{64}{64+4} = \frac{64}{68} = \frac{32}{34} = \frac{16}{17}$; thus we see their joint assertion is somewhat more credible, than the assertion of the first physician; for, $16 : 17 :: 9, 411, \&c. 10$.

619. What has been said of the different opinions of physicians, may be observed also of the opinions of lawyers, and other varying reports, made by persons skilled in subjects not generally understood by the public.

With respect to Probable Facts.

620. If the credibility of the witnesses that oppose each other be equal, two opinions may be held; first, that these testimonies destroy each other, and secondly, that the affirmative

affirmative testimony, coinciding with the probability of the fact, should on this occasion be preferred to the other. The first opinion, however, seems to me the juster; for if the first testimony were preferred, and the fact thus established, the opposite testimony would be of no effect, which is absurd; for, then it might as well not exist. It seems therefore, that in this case, the fact remains as if unattested, and can be maintained only by its internal probability.

621. But if the credibilities of the witnesses that oppose each other, be *unequal*, the resulting probability of the fact may be found by the following formula.

622. Let the chances favourable to the probability of the fact $=b$, and the unfavourable $=b'$;

Let the chances favourable to the credit of the witness who *affirms* it $=a$, and his deficiency $=a'$;

Let the chances favourable to the credit of the witness who *denies* it, $=n$, and his deficiency $=n'$;

Then the resulting probability of the fact

$$= \frac{ban'}{ban' + b'a'n}$$

Thus

Thus if the probability of the fact be $\frac{2}{10}$, and the credibility of the witness who affirms it $\frac{8}{10}$, and of the witness who denies it $\frac{7}{10}$, then we have $9 \times 8 \times 3 = 216$, the numerator of the fraction. And $1 \times 2 \times 7 = 14$, added to $216 = 230$, the denominator of the fraction $= \frac{216}{230} = \frac{108}{115} = \frac{27}{29}$ nearly, or more exactly, $\frac{27}{28.75}$, which exceeds the original probability of the fact by a small fraction; for $27, 28, 75 :: 9, 38.10$.

623. Thus we see, the results must vary according to the various probabilities of the object, and the various credibilities of the affirming and opposing witnesses.

624. What is here said of probable *facts*, may also be extended to probable opinions, supported and denied by unequal authorities.

It is well observed by Dr. Marsh, in his notes on Michaelis, vol. iii. p. 8;

“ When we have certain knowledge of the existence of a fact, as that of an engagement between two armies, no contradictions in the accounts of that fact can disprove the existence of the fact itself. But when the question is in agitation, whether an alleged fact be true

true or not, our *conviction* of the truth of it, will certainly be affected by the concurrence or contradiction of the testimonies in its favour. And if the contradictions are such, as to be wholly incapable of a reconciliation, the proof of the fact will certainly not be so satisfactory, as it would, if the witnesses agreed. But since not every deviation is a contradiction, and the same fact, as viewed by different persons in different lights, not only may, but must be reported by them in different ways; we must examine, whether the deviations are such, as may be explained on this principle. If they are, and the witnesses are in other respects credible, we have no reason for refusing our assent. Further, we must distinguish variations, in respect to concomitant circumstances, from variations in respect to the main fact; for the former are of much less importance than the latter."

With respect to Improbable Facts.

625. If *affirmed* and *denied* by the same number of witnesses *equally* credible, their improbability remains unaltered, as said, No. 620.

626. But

626. But if the credibilities of the opposite witnesses be *unequal*, the resulting state of the fact may be found by the formula No. 622.

With respect to contradictory Original Testimonies.

627. The credibility of these is calculated as that of contrary testimonies; the only difference is, that one must be true, and the other false, whereas contrary testimonies may be both false.

628. The method recommended by Mr. Hume, in his Essay on Miracles, p. 344, 345, for comparing and balancing contradictory testimonies, consists in deducting the *inferior* credibility from the superior; the remainder, he says, will show, how much the superior is weakened. If so, this absurdity would follow, that the credit of the most respectable witness would be destroyed by the opposition of one whose credibility is doubtful; for, suppose the credibility of the one to be $\frac{9}{10}$, and of the other only $\frac{5}{10}$, then $\frac{9-5}{10} = \frac{4}{10}$, which being
below

below $\frac{1}{2}$, denotes improbability, or incredibility. In the above case, the credit of the first physician would by such subtraction be reduced to $\frac{1}{10}$.

SECTION XIX.

OF SUCCESSIVE OR TRANSMITTED TESTIMONIES.

629. If *A* relates to me a fact, which he heard from *B*, and that *B* heard it from *C*, and that *C* heard it from *D*, and that *D* was the immediate witness of the fact, here is a fact conveyed to me through four witnesses; but there is but one witness to the fact, namely *D*. And besides this *principal* fact, there are three distinct *subordinate* facts, namely, that *D* reported it to *C*, that *C* reported it to *B*, and that *B* reported it to *A*; each of these can attest no more, than his own reception of the fact, from the next preceding witness, and of the persons through whom he was informed it was conveyed.

Hence it is plain, that the aggregate
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credibility of these witnesses cannot be calculated like that of simultaneous witnesses, by multiplying the chances, favourable to the truth of each, into each other, as in No. 583; for there all the testimonies were supposed to bear upon one fact, but here they all relate to different facts, namely, their several receptions of the principal fact. Let us suppose the *general* credibility of each of these witnesses be known, and to be, for instance, $\frac{9}{10}$, then I have $\frac{9}{10}$ of a certainty, that *A* received the report from *B*; but though the general credibility of *B* is also supposed to be $\frac{9}{10}$, yet that he received this report from *C*, I have only the probability of the $\frac{9}{10}$ which I received from *A*, that is, $\frac{9}{10}$ of *B*'s $\frac{9}{10}$. For, if *B* made the report immediately to myself, I could have no greater probability of its truth, than $\frac{9}{10}$ by the supposition; and it were absurd to suppose, I could have the same portion of certainty, when I knew it not by my own senses, as if I had so received it.

630. Hence, the rule is to multiply the fractions, indicating the general credibilities
of

of each of the successive witnesses into each other; the product gives the aggregate credibility of all the witnesses.

631. As the credibilities, thus found, continually decrease, it is needless to push the calculation further than the point at which the aggregate becomes *doubtful*; that is, equal $\frac{1}{2}$: this point, if the credibility of each of the witnesses be supposed equal, (for instance $\frac{9}{10}$), is found without tedious multiplications, by dividing the given credibility by its deficiency, and multiplying the quotient into $\frac{7}{10}$; thus the original credibility being $\frac{9}{10}$, it is not rendered doubtful, until it is transmitted through six witnesses; for the deficiency of $\frac{9}{10}$ is 1. and 1) 9 (9 and $9 \times \frac{7}{10} = 6, 3$.

632. If the original testimony of each of the succeeding be $\frac{8}{10}$, it requires only a succession of three witnesses to render it doubtful; for the deficiency is 2 and 2) 8 (4 and $4 \times \frac{7}{10} = 2,88$, and in effect $\frac{8}{10} \times \frac{8}{10} \times \frac{8}{10} = \frac{512}{1000}$.

633. If the credibility of the original testimony were $\frac{99}{100}$, it would become doubtful only
by

by 72 transmissions, and if it were $\frac{999}{1000}$, it would require a succession of 699 witnesses, to render the credibility doubtful.

634. If in the relation of *modern* facts, the original witness is not named or unknown, and the fact such as should not be presumed, or is destitute of internal probability, it seems to me, that the succeeding relaters of the fact are not entitled to any credit.

635. But it seems otherwise as to the relaters of antient facts, as many antient testimonies are irrecoverably lost, in which the original witness might have been mentioned.

636. If any of the successive witnesses are of dubious credibility, or through *credulity* unworthy of credit, the whole chain is interrupted, and the succeeding witnesses destitute of support.

637. If any of the successive witnesses should vary from the preceding, or the original testimony, by the addition or subtraction of some circumstances, yet this does not alter his credibility as to the substance of the fact. See No. 602, &c.

638. From the weakness and continual decrease of successive testimony, some have
inferred,

inferred, that even the object testified might become *dubious*, or even improbable; but falsely; the utmost that can be inferred is, that it may be left destitute of *external* testimonial proof, but its *internal probability* remains unaltered; and in many cases, this is sufficient to prove its existence. This always happens, when the present state of any object is evidently the consequence of some past fact. Thus, if we had no human testimony of an universal deluge, the confused heaps of marine shells frequently found in all countries, on the summit of high mountains, as well as a few feet under the actual surface of the earth, would sufficiently prove it. If we had no account of the conquest of Gaul by the Franks, or of Spain by the Moors, yet the mixture of Teutonic words in the modern French language, and of Arabic in the Spanish, would sufficiently prove these facts, to say nothing of medals and other monuments.

639. The above observations relate to a *single* chain or series of successive witnesses; but if there were two or more *collateral* series of successive witnesses of an indifferent, or

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probable,

probable, or even an improbable fact, sufficiently credible and independent on, and yet agreeing with each other, their credibility could never become dubious, from the improbability, that their agreement could arise from any thing else but the reality of the object testified. This improbability is as the product of their deficiencies, divided by the product of the chances favourable to their credit. Thus, if the credibility of the original witnesses in each series be $\frac{8}{10}$, and if there are two collateral series of concordant witnesses, the deficiency of each original witness will be two, and the chances favourable to the credit of each, eight; the improbability of their agreement from any other cause, but the reality of the object will be $\frac{2 \times 2}{8 \times 8} = \frac{4}{64} = \frac{1}{16}$; and if there be three such series, the improbability will be $\frac{1}{64}$, &c.

SECTION XX.

OF WRITTEN TESTIMONIES.

640. Hitherto we have considered successive testimonies in the abstract, and the conclusions laid down relate chiefly to *oral* testimonies; but the credibility of testimonies committed to writing, is vastly stronger, because not only the original witness has more leisure to weigh his account, and render it more accurate, and his testimony may be preserved, without any alteration, at least one hundred years, and often three or four hundred years; but also, because within that space of time, innumerable copies of it may be taken, and if taken, it is scarce possible, that in the greater number of them, any material error can be committed, or at least, that the same should be found in all of them; if any such be committed, it would easily be corrected by reference to the original.

641. Hence if the credibility of a written testimony be $\frac{2}{10}$, the credibility of the first

copy is not barely $\frac{9}{10}$ of that $\frac{9}{10}$, but approaches very nearly to the credibility of the first testimony; and the reason is, that the existence of the first testimony being permanent for a number of years, its agreement with the copy may be frequently examined and ascertained, and if important, the comparison will undoubtedly be often made; whereas oral testimony being fugitive, its existence can be proved only by the credibility of the second witness, and the existence of this, only by a third witness, &c. The credibility of the copy is, therefore, to be deduced from the probability of its agreement with the original, which in material points, except party zeal interferes, is indefinitely great.

642. If there are two or more original written testimonies, concordant in all material points, and copies are taken of each, and these copies are found to agree, at least in substance, their credibility with respect to the object testified, is nearly equal to the concordant original testimonies: the same observation extends to all the successive copies, and the more numerous they are, the more they strengthen each other.

643. The

643. The true reason, why the copy of a deed, whose conformity with the original is well attested, is refused to be received, as a proof in our courts of justice is, that withholding the original, when it can be produced, induces some suspicion of fraud; for if the original be proved to be lost, or accidentally destroyed, the production of a copy is allowed.

Of Illusive Probability.

644. Under this head I comprehend every imaginary probability, derived from sources that have no connexion with the reality of the object supposed probable, originating from *hope, fear, hatred*, or some other strong passion. That such illusions should exist, is indeed surprising, yet daily experience may fully convince us, that we most readily believe what we wish to be true; or, at least, we believe it more firmly than we should, if we were less interested in its truth, or had wished it to be false. We find a degree of pleasure, in contemplating the object and the reasons favourable to its existence, and of pain, in

contemplating those that destroy this impression. Hence, these last, are either overlooked, or slightly surveyed; the former of course prevail, and the object appears probable.

645. On the other hand, when a danger apprehended is inconsiderable, and our imagination alarmed, though its probability may be remote, or inconsiderable, fear collects, and attaches our attention to the unfavourable chances only; we become incapable of balancing them with the favourable; and the danger is consequently magnified much above its real limits. Under the dominion, therefore, of intruding passions, we can form no true estimate of probability.*

* See 1 Search, p. 291, and 328; and Leland Deist. Writers, Letter XI. p. 176.

SECTION XXI.

OF THE POSSIBILITY OF DENOTING THE DEGREES
OF PROBABILITY AND CREDIBILITY BY NUMBERS.
RULES FOR THE NOTATION OF CREDIBILITIES, AND
THE ADVANTAGES RESULTING FROM SUCH NO-
TATION.

646. It is allowed, that the chances on dice or cards, and consequently the probability of any event relating to them, may be ascertained with the greatest accuracy, as the numbers, favourable and unfavourable, are accurately known; but it is thought by many, that the estimation of the events of common life, and of the credibility of witnesses in numbers, is impossible; because, we have no standard measure, wherewith to compare them, no units, from whose repetition a number can arise; consequently, that all precise estimation must be arbitrary, and therefore useless.

647. Nevertheless, it should be observed, that all measures were originally arbitrary, and became fixed, only by convention and
Z 4 agreement.

agreement. Thus *a foot* is a conventional quantity, arbitrarily fixed upon, and without any determinate foundation in nature, and therefore different in different countries. The same may be said of *weights*, and of measures of capacity, as *pints* or *gallons*; and of measures of qualities, as of *heat, cold, wet, dry, &c.* : in the same manner, probability and credibility are real, though invisible quantities, of which there are different degrees, which have their foundation in nature; for probability is founded on the number of cases in which an event happened, compared with the whole number in which it happened and failed, in circumstances substantially the same. And in the same manner, credibility is grounded on the experience we have had, of the qualities of a witness, requisite to render his testimony more or less credible. Thus, we every day say, that some events, some arguments, some opinions, are more probable than others; that one is *highly* probable, another *scarcely* probable, another *doubtful*, another *improbable*; and we are convinced, that the testimony of Bergman is more credible than that of Paracelsus, &c.

Still

Still it may be replied, " that of sensible quantities or qualities we may have sensible measures, but of invisible quantities, such as the different degrees of probability respecting human events, or of credibility, knowledge, integrity, &c. we can have no determinate measure, by which to estimate their inequality." Yet the contrary is well known; the ratio which the value of any thing bears to the value of any other thing, is an invisible quantity, which is settled, merely by the estimation of the parties concerned; thus, the value of a horse may be deemed *superior* or *equivalent* to that of a certain number of cows or sheep, &c. a number settled by estimation. For the convenience of all parties, this value is estimated by certain quantities of coin, and thus money becomes the standard, to which all valuation is referred. Now, the different degrees of probability, are equally referable, and, in fact, are daily referred to that standard, by insurers, whether of lives, or houses, or voyages, &c. grounded on experience of the number of times the event insured has happened, or failed, in a certain number of years. A jury may settle
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the degree in which they hold a witness credible, and this is better than yielding to a majority.

648. There are many quantities, the ratios of which, to other quantities, cannot be ascertained, yet approximations thereto are highly useful. Thus the ratio of the diameter of a circle to its circumference, cannot be exactly stated, yet none will deny the utility of approximations towards it.

649. The merit of painters has been deduced from the degrees of excellence which they have severally attained, in the different parts of that art, expressed in number, as *design, colouring, expression, and composition*, multiplied into each other. See Mem. of the Roy. Acad. of Paris, for 1755.

650. The principal advantages arising from a specific notation of the degrees of probability and credibility, are,

First, that it fixes the vague distinctions which we naturally make of these degrees, renders them more precise, and thus enables us to deduce conclusions, otherwise unattainable. For instance, we may conclude that, in some cases, the testimony of two doubtful witnesses

is more credible than that of one witness of low credibility. See No. 590, &c. And that the opinions of two physicians or lawyers of inferior note, may possibly be preferable to that of one eminent in either of those professions. No. 618. And this observation may be extended to many cases, that occur in common life, unless some passion or partiality interferes; for when that happens, no certain estimation of probability can be had.

Secondly, it enables us to strike a balance betwixt opposite probabilities, or testimonies, and shew with precision, which of them is preponderant, and by how much.

Thirdly, as in a course of years we ourselves change our opinions, calculation may shew us the precise weight of the proofs or causes, that induced the change.

651. Solidity of judgment consists chiefly in the just estimation of probabilities, and when the requisite *data* are known, it is seldom that any mistake can occur; but in many cases, these are difficultly procured.

652. To help to form an estimate of the credibility of witnesses, whether known to us, or absolutely unknown, I have formed the following

following scale; which, if judged defective, may be amended by others.

<i>Unknown</i> , and of the lowest class	$\frac{12}{20}$
Ditto, fworn	$\frac{14}{20}$
<i>Unknown</i> , but of superior condition,	$\frac{14}{20}$
Ditto, fworn	$\frac{15}{20}$
<i>Known</i> and credible	$\frac{15}{20}$
Ditto, fworn	$\frac{16}{20}$
More credible	$\frac{16}{20}$
Sworn	$\frac{17}{20}$
More credible	$\frac{17}{20}$
Sworn	$\frac{18}{20}$
Still more credible	$\frac{18}{20}$
Sworn	$\frac{19}{20}$
Of the highest credibility	$\frac{19}{20}$

and this is not increased by an oath.

653. In assigning to any person a particular degree in this scale, it is plain, that regard should be had to his age, education, rank in life, and general character, besides the general qualifications mentioned No. 445, &c.

654. The

654. The credibility of the opinion of a professional man, is in general as his repute or situation, if fairly obtained. Yet there are numerous exceptions to this rule. Many, of the highest merit, either through bashfulness, or indolence, or contempt for certain artifices, have never acquired that celebrity, to which their acquirements entitled them. For instance, in the medical profession, the late Dr. Black; and in the legal, Serjeant Hawkins, who was named, from his want of practice, the *briefless Serjeant*.

655. But the opinions of professional men, can seldom be as credible as the testimony of a credible witness to a fact, and commonly only in very clear cases, being for the most part conjectural. Hence I estimate the opinions of persons of the highest repute, at from $\frac{16}{20}$ to $\frac{18}{20}$, and those of lower repute, at from $\frac{13}{20}$ to $\frac{16}{20}$.

SECTION XXII.

OF THE PROBABILITY, MERIT, AND DEMERIT OF
HUMAN ACTIONS.

656. When men are free from physical constraint or restraint, their actions are the results of the actual constitution of their minds, and of the general motives that influence the human will, modified by circumstances peculiar to each case.

657. The actual constitution of the mind consists in its previous dispositions, arising, partly from natural temper, partly from education, partly from preconceived opinions, habits, company, age, observation, and experience.

658. The motives that generally influence the will, are natural instinct and passions, whether selfish or moral, benevolent or malevolent; their energies are various, in different individuals, and in all modified by the presence or distance of their objects, and the facility, or difficulty, or danger to be encountered

tered in attaining them. Distant views are, indeed, generally attributed to *reason*, in contradistinction to *passion*; yet, in reality, reason does no more than discover the importance of the object, and the means of pursuing or avoiding it; the true principle or motive of its pursuit or avoidance, is the passion it excites.

659. Motives of any particular tendency are often so complicated with those of an opposite tendency, that the agent himself hesitates, which of them he shall obey; much more must those, who attempt to conjecture what his determination shall be.

660. However, if the actual constitution of the mind, and the general habitual motives of its actions were known, the resulting determination, might in most cases be inferred, to a great degree of probability. As on a die, having 99 faces marked with an ace, and only one with a deuce, we must judge the turning up of an ace most probable.

661. This almost constant connexion of human actions, with particular known motives, has been, by many, confounded with necessity, but, in my opinion, very unjustly;
for

for a being cannot be deemed to act through necessity, whose choice is, in all cases, directed by what he himself thinks best, while there is scarce any motive, which may not, in some point of view, be thought best ; or, if to him apparently equal, the very necessity of making some choice, is sufficient to chuse in conformity to one or other.

662. And though an absolute certainty of the determination be unattainable by any but Him who reads all hearts, yet in simple cases, experience and observation inform us, that a very high degree of probability may be obtained.

663. As human actions may be traced from a knowledge of the mental constitution of the agent, and of the motives by which he is generally governed, so the motives may themselves be discovered, by a knowledge of the constitution of his mind, and of the actions produced by him ; so that any two of these being known, the third may be fairly inferred.

664. The merit of an action consists in its conformity to moral law, in opposition to all occurring difficulties, and under the guidance of proper motives.

665. Demerit

665. Demerit, on the contrary, or guilt, arises from a wilful breach of that law, through the influence of motives, of whose malignity the agent is conscious, or may and ought to discern.

666. Hence it frequently happens, that as the merit or demerit of actions depend chiefly on the motives, from whence they originate, not only the action, but also the previous mental constitution or character of the agent, and the circumjacent circumstances, should be fully considered, before the intention or motive, and consequently his guilt or innocence, can be determined.

667. In many cases, however, the act itself naturally suggests the probability of a depraved motive, and constitution of mind; and consequently requires a justification on the part of the agent, as may thus be shewn.

668. *Guilt* consists in a wilful transgression of a known moral law; a law in most cases known to all mankind; its knowledge in particular cases, may therefore be presumed, that is assumed as *certain*, until the contrary appears. In the same manner, human actions, being seldom the effects of constraint, must

be deemed *wilful*, until proved not to have been so. Now, all actions proceeding from the will of an agent duly informed, being the results of some motives, those motives that induce a wilful transgression of the moral law, must themselves be incompatible with that law, or at least be deemed so, until the contrary appears.

This subject is well illustrated by Mr. Capel Loft, in his *Law of Evidence*, vol. ii. p. 879, 4th edition; which, as *his* illustration relates to a matter of the greatest importance, and of universal concern, I shall here set it down in his own words.

“Prima facie, nothing in the general consideration of the fact at large, can justify one man’s killing another, under the protection of the same laws.

“The malice therefore, is in the fact itself, without justifiable cause shewn, or a legal excuse; and this will be according to the circumstances proved, if ‘the evidence is of killing without provocation,’ (and it lies on the defendant to shew such provocation as the law allows in excuse,) no particular malice, as we have seen, needs to be proved;

proved; but, if the defendant prove a provocation by assault for instance, of the deceased, the presumption against him from the act of killing, is now *rebutted*, until the prosecutor shew that such provocation was sought maliciously as a colour; so where the evidence tends to prove 'the killing an officer,' or that the party 'who killed,' was committing an unlawful act, and that death ensued to somebody on that action; or, 'if the act' appears deliberate, 'naturally' tending to the personal hurt of any one, 'and presumably to death;' in these 'several' cases the law implies the circumstance of malice, 'disprovable by various evidence, according to the general or special facts which support it;' and this implication of the law is in defence of mankind: for all *malice* ('which in the legal sense is a *disposition to do an unlawful act*,') is a secret quality of the mind: and it is the fact only that appears, and can be brought in proof; and it is from the circumstance of the fact, that a man must collect the offence of the mind, 'and the legal degrees of that offence:' now, when a man kills another, that is, *prima facie*, so ill-natured and

bloody an action, that it is presumed to be malicious, 'till the contrary be proved;' and therefore, the 'apparent' offender, to cover himself from the supposition that the law has made in tenderness to mankind, must shew some 'just necessity,' some 'provocation,' or some accident, in "justification, extenuation, or excuse of the fact;" or, if he cannot thus mollify or excuse the action, the supposition of the law remains, and he ought to be punished with certain death."

CHAPTER VIII.

SECTION I.

OF AXIOMS, MAXIMS, AND APHORISMS.

669. *Axioms* are universal propositions, whose truth, when the terms which express them are understood, is self evident.

Thus the axiom, *whatever is, is*, every one who understands the import of the words *whatsoever*, and *is*, instantly perceives to be true;

true; but these terms being abstract, their signification is not immediately perceived by children, nor by persons in a state of mental imbecility.

670. Mr. Locke, lib. iv. chap. vii. sec. 10, is partly right in denying, that they are the principles or foundations of our knowledge; for, from many of them, no conclusion can be drawn; as, for instance, from that here quoted; yet there are others, from which conclusions may fairly be deduced. Thus, if a definition of any being be agreed upon, properties included in, or excluded from that definition, may justly be inferred or denied, as the case may be, from the principle that *it is impossible to be and not to be at the same time, and in the same respect*. Thus, if it is allowed that God may be defined to be a being, infinitely perfect, and that *veracity* is a perfection, we must conclude, that veracity is ascribable to God, otherwise he would not be infinitely perfect, and consequently *would be and not be God*, which is impossible. In the same manner, the unity of God may be proved, and thus also all imperfections are excluded from his nature.

671. In *geometry*, frequent use is made of axioms; Euclid lays down several, and on them rests the final proof of his demonstrations.

Care must be taken, that axioms be properly understood. Thus, that *the whole is equal to its parts collectively taken*, is evident, when it is understood that none of these parts include the other, as is the case in continued quantity; but if any of these parts include the other, (as in numerals) it is false; thus 7 and 8 are parts of 12, but as 8 includes 7, these numbers, taken together, exceed 12, since they amount to 15.

672. *Maxims* and *aphorisms*, are also general truths, but not self evident. In *experimental sciences*, they are summaries, or final results, from numerous facts, and are highly useful, as from them, several new facts may often be deduced by analogy. In *speculative sciences*, as metaphysics, theology, morality, jurisprudence, logick, &c. they are either the principles, or the immediate and most general inferences, from the principles of those sciences. Thus in *theology*, from the principle, that veracity is one of the attributes of God,

God, it is inferred, that whatever God reveals is true; and, that *any proposition confirmed by miracles, is either mediately or immediately, (as the case may be) revealed by God*; on these maxims, both the Jewish and Christian religions are founded. So in *logick*, that *things that are in any respect the same with, or equal to another, are in the same respects the same with, or equal to each other*, is a maxim, on which all reasoning is founded; and demonstrations *ab absurdo*, on the maxim that of two contradictory propositions, if one be false, the other must be true. So in *chronology*, and *criticism*, certain *canons* or maxims are established, by the application of which, many facts are ascertained, or rejected, &c.

673, Locke also well observes, that axioms and maxims being well understood, and rendered familiar, are very convenient in ratifying, and as it were sealing the conviction of some particular truths, which are shewn to agree with them, and are less familiar, and in fact not originally derived from them.*

SECTION

* In the 11th section of the chapter above quoted, he uses the word *revelation* in a new, and therefore improper sense, saying, that when we find out an idea, by whose

SECTION II.

OF SOME GENERAL DEFINITIONS.

674. To *understand*, is to discern a relation ; thus to understand words, or terms, or propositions, is to discern their signification. To understand a language, is to discern the signification of its words and idioms. A relation is *perfectly* discerned, when its subject, term, and foundation, are known ; but *imperfectly*, if only the subject and term, or only the subject and foundation are known.

675. To *know* a thing, or the truth of a proposition, is to judge it on proper motives to be true, or to be convinced of its truth. To know a science, is to discern the truths, and the foundations of those truths, which it

intervention the connexion of two others is discovered, this is a *revelation* from God, by the *voice of reason*. What he adds of revelation by the voice of the *spirit*, is mere *ent*, which, from the bigotry of the times, he was obliged to chime with ; and what he says of reason, being a revelation, he contradicts, lib. iv. chap. xviii. sec. 2.

contains.

contains. Thus, to know a fact, is to judge if it be true, either on the testimony of our senses, as having witnessed it, or by consciousness or demonstration, or on other indubitable testimony; thus I know my own perceptions by consciousness, the truth of the propositions of Euclid by demonstration, and that there was such a king as William the Conqueror, such an emperor as Augustus, &c. by indubitable testimony. Hence knowledge and certainty are nearly the same; knowledge denoting judgment or conviction, and certainty the reliance or assurance of the truth of that judgment. However, knowledge founded on any foreign testimony is *indirect*, and more commonly called *belief*; yet, may I not say, *I know the sun rose many years before I was born*, or that I had an ancestor 2000 years ago?

676. To *conceive* a thing, is to form an idea or an adequate notion of it. Thus if any thing be explained or described to me, if I can form an idea or adequate notion of it, I may say, *I conceive it*. So if I read a description of London, and from that description I can form an idea of it, I may say I conceive what sort of town it is; but I
cannot

cannot conceive a triangle, one of whose sides is equal to the other two, for I can form no idea of such a triangle.

677. These three terms are frequently used indiscriminately, in common language, and even in philosophical disquisitions; which occasions much confusion. Thus a person is said to *know* a language; whereas, it would be more proper to say, he *understands* a language. Some propositions may be imperfectly understood, which can by no means be conceived. Thus when it is said, that the world was created, the proposition may be understood, otherwise it could not be affirmed; but it cannot be conceived, as of the power by which it was effected, no adequate notion can be formed.

SECTION III.

OF GENERAL LOGICAL AND PHILOSOPHICAL MAXIMS.

678. *All terms are more or less intelligible, whose signification is more or less perfectly known.* Thus, men blind from their nativity,
may

may nevertheless form some notion, though not an idea, of light and colours; since Drs. Saunderson and Moys, who were thus circumstanced, have been enabled to give lectures on opticks, and certainly knew more of the properties of light and colours, than the generality of mankind, See 370. Thus, terms denoting *sensible* objects, or other states of the mind, known only by *consciousness*, or by *intimate conviction and reason*, as the existence of our own mind; or by *analogy*, as the existence of other minds; or of *privations*, as darkness, blindness, silence; or of *negations*, as impossibility, non-existence, annihilation, nihil, or nothing: or complex terms, that denote an *unknown object, together with a known relation to a known object*, or to an unknown state of a known object, are also intelligible; thus $x + 1 = \sqrt[3]{2}$. Here x is an unknown quantity, and $x + 1$ is a complex term: $=$ denotes the relation to the known quantity 2, as does the cubic root the unknown amount of a particular intelligible state of that complex term, or terms that denote the *unknown causes of known effects*, as *force, attraction, electrical or magnetic powers, &c.*

679. *Terms that denote a known fact, though connected with an unknown cause or circumstances, are perfectly intelligible, as nutrition, vegetation, secretion, electricity, magnetism, &c.*

For we cannot deny *general and well-known* facts, of which there must be some mode of causation, (nor consequently deny understanding the meaning of the terms that express such facts, together with their unknown mode of causation,) merely because we are ignorant of the immediate or general causes of those facts; or how, or in what manner, or by what degrees, or for what end, they operate; or of the preceding or concomitant circumstances. An American savage cannot understand how Europeans convey their thoughts to one another by writing, and yet many of those savages are well acquainted with that fact.

680. *Complex terms that express what is evidently repugnant, (as a round square,) are unintelligible; for the signification of the one is incompatible with the signification of the other. Such terms may be called repugnant. (So Berkeley, Min. Philos. Dialogue 7, sec. vi.) and Mem. Berl. 1789, 429.*

681. *Simple*

681. *Simple or complex terms, to which an unintelligible signification is affixed, may also be denominated unintelligible; thus the internal mould of Buffon, is a complex unintelligible term. So also the Archeus of Stahl, and the substantial forms of the peripatetics.*

Such terms may also be called *senseless*, and the *potentia animastica* of Borelli, lib. ii. de vi percussionis. See 1 Baxter 23.

682. *Complex terms that denote somewhat physically impossible, are intelligible, but not those that express a metaphysical or mathematical impossibility. Thus we understand what is meant by perpetual motion, or the philosophers stone; for the impossibility of these arises merely from their inconsistency with the laws of corporeal nature, which the Author of nature may suspend or vary. But metaphysical or mathematical impossibilities, imply a contradiction; such as a mortal and unjust God, a triangle, one of whose sides is as long as the other two, &c.; these also may be called repugnant.*

683. *Terms to which no signification, whether direct, or analogical, or relative, is affixed, are of course*

course unintelligible, and may be called senseless, as Blytre.

684. *A proposition, whose extremes (that is, whose subject and predicate) are intelligible, may be either true or false, intelligible, or unintelligible.* Thus a proposition asserting that men are mortal, is true, though they may be rendered immortal by Divine Power; and so a proposition asserting a natural or physical impossibility is false; as that a dead man may be restored to life, by barely commanding him to rise; though, by supernatural power, this may be effected: but a proposition asserting what is clearly discerned, to be either metaphysically or mathematically *impossible*, seems to me to be, not only inconceivable, but also unintelligible, as that *God is unjust*, or that *he is the author of moral evil*. Though the terms expressing the subject and predicate, are perfectly intelligible; and the reason is, that their connexion cannot be understood, as they exclude, and are incompatible with each other; and their connexion being utterly unintelligible, the proposition must be so too; as to an affirmative proposition, a copula or connexion is essentially requisite: without that, it is not

a proposition, and an unintelligible connexion is the same as none at all. So in mathematics, the assertions that *a part is equal to the whole*, or that *if from equals you take equals, the remainder shall be unequal*, are unintelligible; but it is said, an unintelligible proposition can neither be affirmed nor denied; whereas, the above assertions are denied. The answer is obvious; a proposition unintelligible, because either its subject or predicate, or both, are senseless, cannot be affirmed nor denied; because senseless terms are incapable of any relation, being mere empty sounds, and therefore *senseless*, as at No. 683. But propositions that are unintelligible, because one or other, or both, their extremes are repugnant, are not only false, as many perfectly intelligible propositions are, but can by no possibility be otherwise than false, and consequently can and must be denied. Their falsehood, then, is perfectly intelligible, and therefore may be affirmed; in this sense, their meaning is perfectly intelligible; for falsehood is all their meaning imports; and, for the same reason, propositions, whose copula is impossible, must be denied.

685. *Where the extremes of a proposition are intelligible, and are not evidently incompatible with each other, the proposition may be true, and consequently on proper proof may be credited, though the relation that connects the extremes, is not understood, or imperfectly understood.* Thus in the proposition, asserting that the square of the hypotenuse is equal to the sum of the squares of the other two sides, the terms *square of the hypotenuse*, and those of the other two sides that form the subject of which equality is predicated, are well understood by every mathematician, though he may forget the demonstration, and consequently *not actually discern* the connecting relation of those extremes; so also another person, who has never seen this proposition demonstrated, but who understands the import of the terms, may yet believe, upon the testimony of all mathematicians, that it is true, though he does not *discern* the relation of equality attributed to these squares, nor consequently the truth of the proposition. Nay, in such case, though the relation be indiscernible by all human understandings, yet, on proper proof, its existence may be believed.

Thus

Thus in the proposition *some being is unoriginated*, the term *being* is intelligible; so also is the predicate *unoriginated*; and though the intrinsic foundation of the relation that connects them, is imperfectly intelligible, yet we know such relation to exist; for the truth of the proposition has been demonstrated *a priori* and indirectly by Dr. Hamilton, who shews that a proposition contradicting it, is necessarily false, since if no being was unoriginated, no being whatsoever could now exist; and it has evermore been demonstrated *a posteriori*; but the origination of all created beings is perfectly intelligible, as they are the terms of the relation of infinite power, which requires no subject to act upon, otherwise it would not be infinite; consequently *creation* is perfectly intelligible, though inconceivable, as it is not analogous to any of those effects with which we are acquainted.

685.^b But a fact or doctrine inconceivable, and also destitute of proof, cannot be admitted. (Proofs may be either direct or indirect), thus the causation or power of any creature cannot be admitted, being unintelligible and destitute of proof.

SECTION II.

OF SOME GENERAL DEFINITIONS.

674. To *understand*, is to discern a relation ; thus to understand words, or terms, or propositions, is to discern their signification. To understand a language, is to discern the signification of its words and idioms. A relation is *perfectly* discerned, when its subject, term, and foundation, are known ; but *imperfectly*, if only the subject and term, or only the subject and foundation are known.

675. To *know* a thing, or the truth of a proposition, is to judge it on proper motives to be true, or to be convinced of its truth. To know a science, is to discern the truths, and the foundations of those truths, which it

intervention the connexion of two others is discovered, this is a *revelation* from God, by the *voice of reason*. What he adds of revelation by the voice of the *spirit*, is mere *cant*, which, from the bigotry of the times, he was obliged to chime with ; and what he says of reason, being a revelation, he contradicts, lib, iv. chap. xviii. sec. 2.

contains.

contains. Thus, to know a fact, is to judge if it be true, either on the testimony of our senses, as having witnessed it, or by consciousness or demonstration, or on other indubitable testimony; thus I know my own perceptions by consciousness, the truth of the propositions of Euclid by demonstration, and that there was such a king as William the Conqueror, such an emperor as Augustus, &c. by indubitable testimony. Hence knowledge and certainty are nearly the same; knowledge denoting judgment or conviction, and certainty the reliance or assurance of the truth of that judgment. However, knowledge founded on any foreign testimony is *indirect*, and more commonly called *belief*; yet, may I not say, *I know the sun rose many years before I was born*, or that I had an ancestor 2000 years ago?

676. To *conceive* a thing, is to form an idea or an adequate notion of it. Thus if any thing be explained or described to me, if I can form an idea or adequate notion of it, I may say *I conceive it*. So if I read a description of London, and from that description I can form an idea of it, I may say *I conceive what sort of town it is*; but I
cannot

includes intelligence, and the predicate excludes it, the relation of causation implied by the copula *formed*, is unintelligible, and destitute of any foundation, either intrinsic or extrinsic.* Therefore, in such cases we can distinguish a true from a false proposition, only by the proofs which furnish a foundation for the relation; if the proposition is deduced from known and certain facts, or from premises, whose truth is certain, it must be true, and consequently believed; but without indubitable proofs, (there being in that case no foundation for the relation of the subject and predicate,) its truth cannot be discerned, and consequently it cannot be believed.

688. *Where the terms of a proposition are INTELLIGIBLE IN THEIR LITERAL SENSE, but in that sense, repugnant to the nature of the being of whom they are affirmed, and yet are demonstrably true, in a sense bearing some analogy to the literal, though strictly inconceivable by us, they must be understood METAPHORICALLY;*

* It is not sufficient to call it *inconceivable*, for the formation of the world, even by an intelligent cause, is *inconceivable*, for want of any analogy, but not *unintelligible*.

their

their real mode of existence evidently lies beyond the extent of our faculties.

Thus many of our own mere *intellectual* states or operations, are expressed by terms borrowed from the *corporeal*, and consequently intelligible only by bearing some analogy to these last; thus we say, we *apprehend*, we *comprehend*, we *conceive*, we *judge*, (from *judicare*, whose etymology is *judicare*,) we *reflect*. So the words *evidence*, *certainty*, from *cernere* to decree. But of the real manner or mode in which these mental operations are formed, we can form no notion.

So also we must allow, that God possesses *knowledge*, and *foreknowledge*; for we ourselves know, and even foreknow, many things; but his mode of knowing or foreknowing, must differ from ours, and agree only in the effect, and is in that sense, analogous to ours; but, in reality, infinitely more perfect, and the mode absolutely inconceivable; so that to say he can know future events, only through the medium of their causes, as we do, seems rash and presumptuous. Can we conceive how God knows *pain*? or even any sensation, which he can neither feel, nor form an idea

of, in the sense in which we understand those words?

689. Hence, we may believe what is certain, though connected with something inconceivable, as Descartes long since remarked, *absurdum enim esset, propterea quod non comprehendimus unam rem, quam scimus ex natura sua nobis esse debere incomprehensibilem, de alia dubitare, quam intime comprehendimus atque apud nos met ipsos experimur.* Princip. part. i. sec. xli.

690. Hence objections to the MODE of existence of an object known to exist, but not to the object itself, if any such be, may be INSOLUBLE, because the mode is inexplicable, but furnish no proof of the falsehood of some inassignable mode of existence; they merely prove, that to conceive such mode, exceeds the limits of our actual knowledge, or even, in some cases, exceeds the limits of our faculties.

691. To explain a thing, is to shew its conformity or analogy to some known truth; to explain a phenomenon, is to shew its conformity to some general law, or to assign a cause or a series of subordinate causes, of which we can form a clear and precise idea or notion, that contribute

To its production. So Dr. Black explained the effervescence arising during the solution of limestone and of alkalies, and the causticity of lime, &c.; Priestly, the composition of the atmosphere; Cavendish, the formation of water, and of nitrous acid; Scheele, the composition of vol. alkali, &c.; Bergman, the formation of sulphurated waters; Lavoisier, the solution of metals, &c. So to explain the mechanism of a clock, the mechanist begins by shewing, how the weights pull round the main wheel, and how that by its teeth catches hold of the next wheel, &c. and thus exhibits the series of subordinate causes leading to the motion of the hammer, which strikes the bell, and the motions of the hour and minute hands and pendulum. So to explain a word or a sign, is to shew its signification in intelligible terms.

692. *Neither truth nor evidence admit of any degrees;* for truth consists in a perfect conformity, either of a sign to the thing signified, or of a copy to its original, and therefore is incompatible with any excess or defect. So evidence consists in a full and accurate discernment of the relation betwixt the subject

and the predicate of a proposition, or, that no such relation is discerned or discernible, if the proposition is evidently false. But *falsehood* and *probability* are susceptible of many degrees, the former deviating more or less from truth, and the latter more or less distant from certainty.

693. *Neither does metaphysical or physical necessity admit of degrees*; for what is metaphysically necessary, is absolutely impossible to be otherwise, and impossibility evidently has no degrees. What is physically necessary, cannot, consistently with the established laws of nature, be altered, or happen otherwise than conformably to them.

694. *But moral necessity sometimes, though rarely, admits of degrees*: moral necessity is only a very high degree of probability, as that of a million to one, and therefore admits of some, but comparatively exceeding few, exceptions. But in its *supreme degree*, it coincides with metaphysical necessity; thus a motive of some kind is necessary to all acts of the will. No man can prefer actual pain to actual or future pleasure, &c.

695. *Conditional necessity* is that, which is asserted

asserted to exist in the relation of means to an end, supposing the attainment of that end to be intended. It is commonly of the moral kind, and susceptible of degrees.

696. *But liberty is susceptible of many degrees, as the difficulties of making a choice are more or less pressing.*

697. *Every judgment founded on a real relation betwixt its subject and predicate, if the judgment be affirmative, or on the impossibility of such relations, if the judgment be negative, must be true.*

For the truth of a proposition (and a judgment is a mental proposition,) consists in the agreement of its extremes with each other, if the judgment be affirmative; or in the exclusion of such agreement, if the judgment be negative: now this agreement is *real*, when it is demonstrated, or self-evident, or certain; and so also is its absence, when it is neither demonstrated nor self-evident; and still more so if, on the contrary, such relation is excluded, or proved to be impossible. But, though the reality of a relation be not evident, yet the existence of such relation may be probable.

698. *Partial, or inadequate ideas or notions*
of

it follows, that in that respect, ice, water, and vapour are the same thing.

701. *Things whose physical, metaphysical, or moral properties, are in any respect similar to those of a third, are, as to those properties, similar to each other.* Thus, different bodies having the same weight as a third body have the same weight with each other, and equality admits of no degrees, as is evident. But qualities, as colours, heat, cold, &c. may be said to be similar, though differing in degree. Thus water heated to 200 degrees, and water heated to 212 degrees, are both called hot.

702. *But things whose relations are similar to the relations of a third thing, do not therefore bear a similar relation one to the other, but rather relations similar to the relations of each other.* Thus, if *A* and *B* are both fathers, and in that respect resemble *C*, it does not follow that *A* is father to *B*, or *B* father to *A*; for not only the subjects of each relation are different, but the terms also, and consequently it is impossible that the subject of one should be the term of the other. It is in the foundation only of the relation, that the three relations

relations agree, or are similar to each other.

703. Nay, if two objects bear similar relations to a third object, as the term of each of them, it cannot follow that either of them should bear a similar to the other, but rather that the relation of one of them to this term, is similar to the relation of the other, to this same term; thus, they agree not only in the foundation, but also in the term.

Thus, if *A* is subject to *B*, and *C* also subject to *B*, it does not follow that either *A* or *C* are subject to each other, as is evident.

704. Ratios or proportions, said to be similar to each other, are in fact not merely similar, but exactly the same in each case, the one being constantly reducible to the other. Thus, the ratio of two to four, is exactly the same as that of 6 to 12, or of 2000 to 4000.

705. Two things are not the same, but some how distinguishable when what can be affirmed of the one, may be denied of the other.

706. A proposition is necessarily true, if a proposition that contradicts it is necessarily false, and VICE VERSA. Hence, two truths can never contradict each other.

706. Many

706.^b *Many slight probabilities concurring, are equivalent to a strong probability.* Thus, many farthing candles burning together, may give as strong a light as a thicker candle.

707. By *action* I understand, that disposition of a being, by whose immediate intervention, the existence or destruction of another being, or any change in the state of a being, has ensued. To act, therefore, is to intervene in procuring the existence or destruction of, or change in, another being, or in one's own.

708. The substance in which this disposition exists, is called an *agent*.

709. A being, therefore, by whose immediate action another being exists, or is destroyed, or altered, is said to have *produced it*, and is called its *efficient cause*, or simply its *cause*, or the cause of its destruction, or alteration, as the case may be. And even the *end*, *reason*, *occasion*, *condition*, *model*, or *instrument* of the action of an efficient cause, as they contribute, though remotely, to the existence of the effect produced, are frequently called its causes.

710. *Causation*, denotes the relation which has connected a cause with its effect; the foundation

foundation of this relation is the action of the cause. Its subject is the cause itself, and its term, is the effect produced.

711. By *change* I understand a succession of states.

712. *Every being that exists, except one, has had a cause.* This is abundantly proved by Dr. Clarke, Mr. Locke, Dr. Hamilton, and many others, in treating of the existence of God.

713. *Every being is necessarily prior to that being which is its effect.* For, if they be supposed contemporaneous, they must have obtained their existence together, at one and the same instant, and consequently one of them cannot be supposed to have received it from the other. Thus, if the sun be supposed to have been always luminous, the first rays must have been created with it, though in the subsequent instants, light (according to the received opinions,) may have been emitted from it.

714. *But a being considered as a CAUSE, must in that respect be contemporaneous with its effect.*

For, considered as a cause, it bears a relation

tion to its effect, since it cannot be denominated a *cause*, until it has produced its *effect*, which is its term. A relation without a term, cannot exist. A man cannot be called a father until he has had a child.

715. Hence the distinction of priority of nature, and priority of time, is unfounded.

716. Hence also, every cause must be distinguished from its effect, either physically, or modally.

717. *Natural or secondary causes, as they are commonly called, are in fact not the CAUSES but the SIGNS of the various changes which they precede, and which on that account are deemed by many to be effected by them; whereas, the sole efficient cause of these changes, is the supreme Author of nature himself.*

718. The order in which they follow each other, and the distinct or different appearances they exhibit, in each particular case, and, in different subjects, is constant and uniform in similar circumstances; and thus bearing every character of a fixed constitution, they are necessarily deemed the results of general laws by which they are regulated.

719. That they are the *signs* of the changes they

they precede, is certain, for, when once their connexion with these changes is known, and a similarity of subject and circumstances is observed, these changes may with certainty be predicted; on this knowledge, all the processes of all arts are founded. But, that they cannot be deemed the causes of any change in the strict sense of that appellation, is equally apparent; for to suppose them *causes*, we must suppose them to possess *power*, or, in other words, that power is one of their properties. Now, that power should be a physical property of any body, is both inconceivable and unnecessary; for all the real properties of bodies, in every other case, and, indeed, essentially, are such as may, by possibility at least, be supposed perceptible by our senses; but power, being an incorporeal or metaphysical property, can in no conceivable case be an object of any of our senses. Hence, neither Sir Isaac Newton, nor the most enlightened of his followers, have considered attraction as an inherent property, nor an efficient cause, but rather as the unknown principle of the tendency of bodies to each other. Now, an inconceivable property should never be ad-

mitted without necessity, and here the admission of such a property is totally unnecessary, as the exertion of divine power, regulated by established laws, adapted to every case, is fully sufficient to answer the purposes of general or particular inherent powers.

720. Men also have a dominion over these changes. Of their own volitions, they are the real and efficient causes, but to these volitions a limited power over their own bodies, is generally annexed; by the motion of their own bodies, they can alter the states of other bodies; but the changes arising from the motions thus communicated, and the order according to which they succeed each other, are still conformable to the laws of nature, that relate to these new circumstances; however, as the volitions of men are the original *occasions* of these changes, from whence the succeeding derive, men, or their volitions, are with sufficient propriety considered as their *occasional causes*.

721. *How* any being has its existence, either from any other, or without receiving it from any other, is equally inexplicable, and it must be so; for *how* denotes manner, instrumentality,

lity, or mediation. And to explain these, they must be supposed to have existed; but they have not existed in the case of a being *unoriginated*, nor in creation, which can have no intelligible cause, but the will of the Creator.

722. *Every power is referable to some substance.* Thus, the power of willing exists in the human mind, the power of creating, in the Supreme Being; in short, every power must be the power of somewhat, as every property must be the property of somewhat.

723. *We can never attribute power to any being, but by having observed it, or by analogy, or by its being included in the definition of such being.**

724. *Necessity can in no case be considered as the ground or cause of existence.†* For necessity is a mere abstract term, denoting the impossibility of the non-existence of that, whatever it be, whose existence is asserted. This impossibility has undoubtedly its foundation in the nature of the thing, to which it is ascribed, but this foundation is nothing distinct from

* Hamilton, 39.

† Ibid. 82, 83.

the thing itself, and therefore cannot be the cause of it. Thus we say, *the three angles of every triangle are necessarily equal to two right ones*; or it is *necessary that the three angles of every right-lined angle, should be equal to two right ones*: we cannot mean, that necessity is the cause of this equality, but simply the mode in which we conceive it to exist.

725. A *law*, inasmuch as it refers to the will of a lawgiver, may well be denominated a *cause*; whether physical or moral, as the case may be, but without such reference, it is a mere senseless term.

726. *The adaptation of means to an end can proceed only from an intelligent cause.* For this adaptation presupposes a discernment of the relation, which the means bear to the end. Now the discernment of relations is what constitutes and discriminates an intelligent cause from all other supposed causes. And hence, the more complicated the means, the greater must be the intelligence of the cause.

727. *An effect is not always proportioned to the power of its cause: nor is the power of a cause necessarily proportioned to its effect.* Thus, an artist, who can make the most complicated machine,

machine, may also make the simplest. But this is to be understood of real efficient causes, and not of those improperly so called, as mechanical and instrumental causes; for the effects ascribed to such causes, are certainly *signs* of the power exerted by the real efficient causes.

728. *There cannot be two causes of exactly the same effect.* For, in that case, each would be the total cause of the effect, and not the total; since, besides it, there would be another also; the effect would be entirely produced by one cause, and yet not entirely, since the whole was also produced by another cause, which is evidently contradictory. When a load is drawn by two horses, one part of the weight is drawn by each; it would be absurd to say, that the whole weight was drawn by each, as well as contradictory to common experience.

729. *An affirmative proposition, unless self-evident, requires to be proved;* for, an affirmative proposition asserts the existence of its subject, at some period of time. Now, the existence of any being cannot be supposed, without being proved, unless we already

know that all possible beings exist, which we are certainly far from knowing.

Hence, an hypothesis cannot be deemed true, from the mere circumstance, that its falsehood cannot be shewn.

729^b. Beings should not be multiplied without necessity.

SECTION IV.

OF THE AGREEMENT OF FAITH AND REASON.

730. By *reason*, I here understand, first, intuitive, or demonstrated truths, whether metaphysical, mathematical, or moral.

731. Or, secondly, the intellectual faculty of the human mind.

732. Or, thirdly, the known laws of corporeal nature, and high probabilities.

733. Or, fourthly, expectations founded on the usual train of moral events, or the usual effects of human characters.

734. *Faith* denotes trust, or confidence in, or a persuasion of the veracity, probity, or integrity of any person, and in this sense, we
are

are said to *believe in him*; or, secondly, it denotes the credit given to his testimony, in any particular case. This is grounded on the first sense.

735. Faith is either human, or divine, according as it is given to the testimony of men, or to that of the Supreme Being; this last is simply called *faith*.*

736. *Divine testimony* to any truth, is called a *revelation* of that truth.† This testimony is given either *immediately*, by a supernatural communication, or inspiration, of which we know nothing more than that it has existed, as such communication has commonly had no analogy to our usual inlets of information, (though sometimes it has been given by angels, appearing in a human form, and consequently in a manner, similar to that, by which we receive information from each other); or *mediately*, by the positive assertion of persons possessed of supernatural powers, exerted in proof of the credit due to them, and of the truth of the facts or doctrines they announce. Or, lastly, and more re-

* Locke, lib. iv. chap. xvi. sec. 14.

† Ibid. chap. xviii. sec. 2.

motely, by *tradition*, from persons, to whom such proofs have been exhibited.*

737. Thus, Christ received his doctrine by inspiration;† for, he asserted that his doctrine was not his, but rather His that sent him;‡ and the ancient prophets, as Jeremiah, Ezekiel, Hosea, &c. asserted that the *word of God*, that is, a revelation, was made to them; the apostles received their doctrines from Christ, who, by miracles, proved his veracity, and numbers received them from the apostles.

738. Consequently, Christ and the ancient prophets believed the facts or doctrines they announced, to be true, through the conviction that they received them from God, who can neither deceive, nor be deceived; which conviction wrought on their minds, as powerfully as the evidence of a mathematical proposition.

739. But the apostles believed these truths to have been revealed, not through a conviction impressed on their minds, by imme-

* For the sense of this word, as here applied, see Grot. in Matth. chap. xv. sec. 2.

† Fleury, Ecclesiast. Hist. i. 249.

‡ John, vii. 16.

mediate inspiration,* but by the intermediation of reason, for they must have argued thus.

740. Doctrines, which God has attested, must be true; but God has attested by miracles, which we ourselves have seen, the truth of the doctrines which Jesus has preached, and which we ourselves have heard him deliver. Therefore, the doctrines preached by Jesus, are true. Their faith, therefore, was founded on reasons perfectly evident and conclusive, resting, first, on the evidence of their senses, and, lastly, on a demonstrative argument, - that these doctrines proceeded from God himself.

741. Again, the persons who received these doctrines from the apostles, believed them to have been revealed, that is, miraculously attested by God, because they were announced to have been so, by persons, who could have been impelled by no human motive, whether of ambition or pleasure, to impose upon them; who asserted them in opposition to their

* Not even Peter, when he confessed Jesus to be the Son of God; for, otherwise, it were no merit in him to have done so. See Hammond's note on Matth. xvi. 16, and Wolzogen.

earliest and most flattering prejudices, deterred by no menaces, dangers, or sufferings; nay, they knew that many of them had suffered death, in consequence of their attestation, that they had seen the author of these doctrines alive, after he had been notoriously put to a public and ignominious death.

742. Consequently they had a moral certainty of the veracity of the apostles, and consequently, of the truth of the doctrines they announced, as originally attested by God himself.

743. Lastly, all succeeding generations believed these doctrines to have been revealed, on the authority, that is, the attestation of the preceding generation; that they received those doctrines, or rather the books that contained them, from the former generation, and so on, in a retrograde order, terminating in that which received them immediately from the evangelists or apostles themselves.

744. The apostles who received these doctrines from Christ himself, were *certain* that they were true in *some* sense, yet they did not understand them in the true sense, until they had received a new illumination at, or after the

the day of Pentecost; thus, before, and even after the resurrection, they expected Christ to establish a temporal kingdom.

745. Hence, it is plain, that the sense of doctrines taught by Christ himself, might be mistaken by those, to whom they were immediately announced, since it was misunderstood by the apostles; thus, when he informed them and others, that he was the Christ, or Messias, they mistook the meaning of that word, for they imagined the Messias would be a temporal prince.

746. We see also, that the faith of persons to whom revealed doctrines were *mediately* conveyed, was in every progressive step, from the generation that received them from the apostles to that now existing, grounded on reasons evincing their derivation from God himself; hence, in every case, faith is founded on the evidence of sense, or on moral certainty, that such evidence had been given, and, therefore, can in no case contradict either reasons metaphysically evident, or the evidence of sense; for, if it could, it would subvert itself, being, as we have seen, grounded on both; and the reasons for believing the truths

truths taught by revelation, cannot be stronger than those we have for believing any other evident truth.

747. In examining, therefore, whether any doctrine has been revealed, we are to observe, whether such doctrine be conceived in *intelligible* terms ; and if so, whether it contradicts any intuitive or demonstrable truth, whether metaphysical, mathematical, or moral ; or facts whereof we have a moral certainty ; for, if it does, it cannot be supposed to have been revealed.* And, if found not to contradict any such truth, whether there be a moral certainty of its having been revealed, that is, whether it be certain that the texts said to imply it are genuine, and irrefragable, and undoubtedly contained in the books either of the old or of the new Testament, which all Christians allow to contain revealed truths. And, if so, whether the passages said to contain it, are to be understood in the literal, or in a

* So Moses commanded a prophet tempting the Jews to worship false Gods, not to be believed, but, on the contrary, to be put to death, though what he tells should come to pass. Deuteronomy, chap. xiii. v. 1—5.

figurative

figurative sense; and whether it be morally certain that they are to be taken in that particular sense, or whether they are susceptible of a double sense.

748. If any fact or doctrine, contrary to an evident or demonstrable truth, has the *appearance* of having been revealed, it must, notwithstanding such appearance, be rejected; for, the certainty that we rightly understand texts, presenting a sense incompatible with evident or demonstrated truths, can never be so great as the certainty of those truths, which that sense opposes.

749. Thus, though it is expressly said in the writings of the old Testament, that God made man after his own *image*, that he *repented* having made man, that he remembered, &c. ; and, consequently, that God had a body, which that of a man resembles; that he is subject to human infirmities and passions; yet, as the plain literal sense of these texts, in which this doctrine is apparently revealed, is evidently contradictory to those perfections, which are demonstrably attributed to the Supreme Being, this sense (which anciently imposed

imposed upon many,*) is now rejected by all Christians.

750. Here I cannot omit stating, a celebrated distinction taken between things, said to be *consonant to*, or *according to reason*, and those said to be *contrary to reason*, and those said to be *above reason*.

751. *Reason*, in these cases, is taken in two different senses; for it either denotes the general and well-known maxims of that science, to which the matter alleged is supposed to relate, or, it denotes the actual or possible extent of the faculty of reasoning. Thus, in natural science, a phænomenon is said to be *according to reason*, when it is conformable to physical laws and general experience, such as the laws of gravity, elasticity, chymical affinities, &c. or even to the usual effects of the powers of magnetism, or electricity, which

* The Antropomorphites, see their arguments in Burnet's *Archæologia*, p. 518. So also St. Austin, see Fleury, *Ecclesiast. hist.* vol. v. p. 195; and 2 Jerom. fol. 161, and 163; and Hooker's *Life*, p. 12; and the *App. of Paris*, *Pastoral Letter in Rousseau*, vol. ix. p. 32.

have not been, as yet, satisfactorily deduced from general principles. So in metaphysics and morals, those propositions are said to be consonant to reason, whose truth is either evident or deducible from the evident principles of those sciences.

752. Again, those facts or propositions are justly said to be *contrary* to reason, which contradict the laws or maxims of any particular science, such as that a man really dead, should be restored to life *by any human means*; that lead should float on water;* that a man should see by his ears, or hear by his eyes, &c. ; that the universe should exist without a cause or result, from the operations of an unintelligent cause ; that the distinction between virtue and vice is merely arbitrary, &c.

753. Lastly, those things are said to be merely *above* our reason, which concern facts *undiscoverable* by our natural faculties, or imperfectly intelligible, such as the future resurrection of the dead, the existence of angels. Secondly, facts as yet undiscovered, as the

* Yet gold may, when sufficiently expanded, as gold leaf: lead is as yet, at least incapable of such expansion; its condensed state is here understood.

cause of earthquakes, that of magnetism, electricity, the laws and minute circumstances attending the process of vegetation, or of the nutrition of animals, &c ; though these cannot justly be said to be beyond the reach of our faculties, but rather above or beyond the actual state of our knowledge; otherwise many discoveries in the last century, such as those of Franklin, Black, Priestley, Cavendish, Lavoisier, Montgolfier, &c. might in the preceding century, be said to be above reason, and those of Newton, in the 17th century, &c. But the most important points said to be above our reason, are those of whose truth we cannot doubt, though it seems irreconcilable with other evident truths, or imperfectly intelligible, as unorigination of any being. Of these I shall state a few, and briefly shew that some of them are misunderstood, and others indeed incommensurable with human reason; that is, imperfectly intelligible, but none of them inconsistent or contrary to evident truths: the principle points of this kind are, first, the union of the soul and body. Secondly, the agreement of Divine prescience and human liberty. Thirdly, creation.

creation. Fourthly, eternity. Fifthly, the Divine immensity. Sixthly, the admission of evil. Seventhly, the nature of the percipient principle in brute animals.

754. And first, *as to the union of the soul and body*, the difficulties so clearly and ably stated by Dr. Priestley,* are indeed unanswerable in the commonly-received opinion, that bodies are external substances, distinct from the mind; but are destitute of foundation when bodies are considered as mere sensations; a truth, which our immortal Berkeley has long ago demonstrated.

755. Secondly, the certainty of Divine prescience is easily seen to be consistent with the free agency of the human will, when it is considered, that this freedom requires no more than an uncontrolled choice among motives to action, whose influence, when viewed in different lights, may, in some cases appear equally, and in others unequally advantageous. If the apparent inequality be infinite, there is, I grant, no freedom of choice, but in proportion to the diminution of their different appe-

* Disquisitions on the Nature of Matter, p. 56, &c.

tibility, liberty may exist. It is only, then, where the motives or inducements may be made to appear equal, or approach to an equality, that some uncertainty can prevail; but, in the Divine mind, such uncertainty cannot be found; for, as God's knowledge extends to all possible truths, that of a choice betwixt either of the opposite motives must be known to him, at least as possible, and then that order of things, or series of events, in which a correspondence of one of these motives with volition is foreseen as future, because it will in reality happen, is chosen and decreed.

756. Thirdly, *creation*, being evidently the result of Divine will and power, is perfectly intelligible, when it is considered that this power is infinite. The axiom, that *of nothing, nothing can be made*, relates only to finite, not to infinite power, which requires no subject to work upon, and by which, all things possible may be effected. Of the fact we have a clear notion, and that is all the word denotes; it is only the mode or manner which we cannot comprehend; for this very valid reason, that such mode is merely fictitious, and never existed.

757. Fourthly,

757. Fourthly, *eternity*; the notions commonly entertained of it, undoubtedly involve absurdities. It is held by some, to be a species of duration, implying infinite succession, yet to this succession, an increase is daily made, which is contradictory to the notion of infinity. Besides, what could be the succession when no creatures existed. Others defined it to be a duration that exists altogether, a *punctum stans*, than which notion, as Mr. Locke observes,* nothing can be more inconceivable. For, if this were true, nothing in reality could be said to be past or future, and the creation of Adam and his yet unborn progeny would co-exist, &c. &c.

758. The true notion then of eternity, is that of *existence without a beginning and without an end*. The exclusion of limits in this case, is as intelligible as in any other.

759. Fifthly, *the Divine immensity*: this again includes an evident contradiction; for it is supposed to fill all space, and yet not to be extended. But this is one of the many absurdities swept away along with material substance.

* Book II. chap. 17. sec. 16.

in the existence of things, relatively to us invisible, on the testimony of those, to whose eyes they are more advantageously presented, so we may believe what is above our reason, if not in itself repugnant or senseless, on the testimony of a being, whose intelligence infinitely surpasses our own.

764. Bayle,* about the beginning of the last century, denied the distinction betwixt things *above* reason, and *contrary* to reason. Upon this principle, that what is *not conformable to reason*, must be *contrary to reason*; just as what is not conformable to truth is *contrary to truth*. By want of conformity with reason, he must mean what is inconsistent with other truths, and if so, he says what is perfectly just; for, what is not consistent with other evident or demonstrated truths, must be not only *above*, but also *contrary* to reason. His comparison is then defective, since reason here signifies truths, as far as truths are known to us. But if by conformity with reason, he means explicable by human reason; and by what is not conformable to reason, he means not *expli-*

* See 3 Bayle, Posthumous Works, p. 833.

cable by reason, his assertion that such doctrine is *contrary to reason* is false; for he himself will allow, that the unorigination of any being is *inexplicable*, though far from being inconsistent with any truth; its *inexplicability* arising from its want of analogy with other truths, and so are many natural phenomena. So also, when he says that many revealed truths are *irreconcilable* with human reason, if he means that they are *adverse* to it, he is mistaken; but if he means that their direct connexion with other truths, cannot be shewn, or, in other words, that they are inexplicable, he says what must be allowed.

CHAPTER IX.

OF FALSE PRINCIPLES.

SECTION I.

UNAUTHORISED SUPPOSITIONS OF PARTICULAR INTERPOSITIONS OF DIVINE PROVIDENCE.

765. It is, I believe, at present, an acknowledged truth; that corporeal nature is governed by general laws; by which I understand the

regular agency of the Divine Being, modified and diversified in various predetermined circumstances, commonly called the *course of nature*, discovered by experience, and according to which men regulate their most important actions. Yet some think, that this regularity is occasionally interrupted, either for the protection of the virtuous, or the punishment of the vicious, or at least of those they deem such. Thus the earthquake which overturned Lisbon, on the 1st of November 1755, was interpreted by many to have been a punishment of their idolatry on that day; if so, Rome, Paris, Madrid, and Vienna, should also have been destroyed; yet, as Voltaire justly remarks, *Lisbonne est abimée, et l'on danse à Paris.*

766. This supposition, when unwarrantably extended, is nothing less than an audacious attempt to scrutinize the impenetrable designs of Divine wisdom, is fraught with the most pernicious consequences, and is condemned by our Lord himself, Luke 13. It tends to subvert the most essential tenet of Christianity, namely, that this life is a state of discipline and probation, and that on this principle,
misfortunes

misfortunes are equally incident to the pious, and impious. Upon the absurd supposition of such providential interference, though contradicted by general experience, it was inferred, that in all contests, God would render the juster party victorious; hence originated the barbarous trials by ordeal, thence called *judicium Dei*, and the equally detestable practice of duelling. Both Mahomet and Cromwell attributed their successes to the particular interference of Providence in their favour, and thence inferred the justice of their respective pretensions. In Spain, both the Bible and the Alcoran were committed to the flames, it being imagined, that whichever of them contained the true doctrine, would remain unhurt; but, to the astonishment of the bigots, both were consumed. Many other instances of this presumptuous credulity, may be seen in Lord Kaimes's *Sketches of the History of Man*, vol. ii, p. 412, 413.

767. The bigots of the age of Theodosius, persuaded his sons, that the good fortune of his father, was owing to his persecution of Pagans and Heretics. Hence, his son Honorius persecuted both, with the most outrageous violence; yet, in his time, Rome was taken,
and

neously, that is, instinctively, arises in the mind acquainted with that circumstance; the necessity of food for the prolongation of animal existence, is certainly not known as an innate principle, but hunger, at certain intervals, renders us sufficiently aware of it.

771. The existence of such feelings, or internal instinctive judgment, even in heathen nations is acknowledged not only by Christians,* but by heathens themselves.†

772. That

* Epist. ad Roman. cap. ii. 14, *for when the Gentiles which have not the Law, do by nature, the things contained in the law, they are a law unto themselves*; and v. 15, *who shew the work of the law written on their hearts*, their conscience also bearing witness, and their thoughts, accusing or excusing one another. It is remarkable, that Mr. Locke makes no mention of this text, when treating of moral principles, lib. i. cap. iii.; nor, does he take notice of it in his Comments on the Epistle to the Romans, though in fact, it does not contradict his assertion; for, he only denies, that abstract moral principles are innate. The moral sense he was unacquainted with, as Stewart justly remarks, *Outlines*, p. 24, &c. Le Clerc strongly endeavours to evade the force of this text, interpreting, *written on their hearts*, to mean *discoverable by reason*; see his notes. But what should tempt them to reason at all, if there were no instinct warning them to do so? In reality, reason in simple cases is totally needless, the sentiment precludes it.

† See Cicero de Legibus, lib. i. cap. 11, and the fragment

772. That the sentiments which regulate the intercourse of the sexes, and which, in civilized countries, are commonly deemed natural, (though in some instances, evidently factitious, for they could not originally have taken place) differed in different countries, may be granted, as they seem only the secondary dictates of the natural law, when reason had in some degree been cultivated; but the more outrageous violations of that law, in this respect (as that which is said to take place among the Guebres or ancient Persians), evidently proceeded from superstition; for it is said to have been practised for the purpose of mortification.* And to this principle we may also refer the Babylonian law, commanding indiscriminate prostitution if it ever existed,† which,

ment de Republica, and the numerous quotations of Grotius, in his notes on this text, and on Luke xii. 47; also Home's *Sketches of the History of Man*, vol. ii. p. 342. Dub. edit.

* Bicar Cerem. Relig. however, I much question its existence, as Herodotus does not mention it, nor does Tavernier.

† The superstitious principle which might have given rise to it, is explained by Goguet, *Origin of Laws*, &c.
Book

to be lightly credited, as the authors of the universal history well remark.* On the contrary, their character is highly extolled by Justin,† and other authors quoted by Bochart in his *Pbaleg*. The saying of the Satirist is well known, *quantum Grecia mendax, audet in historia*; Quintilian Inst. Orat. ii. 4, *Græcis historiis plerumque poeticæ similis est licentia*; and Cicero de Legib. lib. i. cap. 1. *apud Herodotum patrem historiæ, et apud Theopompum, sunt innumerabiles fabulæ*.

775. That some African hordes devour their own children, and the still more absurd tale, of mothers alternately feasting on each others children, stand self refuted, since those hordes did not cease to exist.

The Spartan law, for destroying deformed and sickly infants, may well be presumed to have taken place, only with respect to monsters, since Agefilaus, though born lame, and so feeble and delicate in appearance, that his parents had no hopes of being able to rear him, was not only preserved, but lived 84 years.‡

* Vol. ii. p. 273, folio ed. † Lib. ii. cap. 1.

‡ Goguet, lib. vi. cap. iii. p. 279.

776. Thefts could not be criminal in Sparta, where they were allowed by a law assented to by the people themselves.

777. The destruction of aged parents, by some American savages, was not the result of want of natural affection, but of absolute necessity, as during the absence of the younger part of their families in providing food, without which all must perish, the aged and infirm could not defend themselves against wild beasts, and therefore demanded a sudden death, as a less cruel termination of their misery. Even among ourselves I have known persons seized with a hydrophobia stifled between two feather beds, to terminate their sufferings.

778. Various other enormities, enumerated by Sextus Empyricus,* evidently without any attention to modifying circumstances, and with the systematic view of rendering all principles, whether of reasoning or morality, problematical, and also by Puffendorf,† are unsupported by any proper testimony, and therefore wholly improbable. That those col-

* Lib. iii. chap. xxiii.

† Lib. ii. chap. iii. sec. 8.

lected by a late eminent writer on the law of nations* from lying or ill-informed modern travellers, were ever habitually and coolly practised by any savage tribes without remorse, is much less credible, than that Europeans, ignorant of their languages and of their motives, should have misrepresented them. Would not a savage, or even a Chinese imperfectly acquainted with the Portuguese language, naturally suppose that burning a Jew or an heretick at an *auto da fe*, was an human sacrifice offered by Christians to their God? The ancient heathen nations were much better acquainted with the Jews who lived among them, and spoke their languages, than any of our travellers, so much relied on, could be with the savage tribes, whom they cursorily visited; and yet they did not understand why the Jews abstained from the flesh of swine. Tacitus, says, *sue abstinent, memorid*

* Ward's Enquiry, vol. i. p. 73 & 82. He collected chiefly from Hackluit, who was himself no traveller, but, as Locke says—"Stuffed his accounts with stories taken on trust, and from Tavernier, whose travels are full of mistakes, as Baron, a native of Tonquin, remarks; and from Picart, whose work is filled with trash."

cladis quod ipsos scabies quondam turpaverit, cui id animal obnoxium. And others thought this custom proceeded from their reverence for hogs, *et vetus indulget senibus clementia porcis.* Persius. Many customs prevail in different nations, which, though founded on sufficient reasons, appear absurd to those who are unacquainted with those reasons. Thus by the Egyptian laws daughters were obliged to maintain their indigent parents, but sons were not ; * because, as L'Archer well observes, males were often necessarily absent from their families, either on military service, or as judges, or as priests of distant temples ; whereas, females had no occupation that necessitated their absence.

779. Neither can any conclusion adverse to the principles here stated, be justly inferred from the cruelty of American savages to their prisoners ; for the conduct even of civilized nations, in a state of hostility, is not accurately and immediately pointed out by the moral faculty ; and hence even in modern times an eminent jurist has allowed the use

* Herod. Lib. ii. chap. xxxvi.

of poisoned arms,* &c. ; and others, as Vattel, &c. have very properly condemned it. It is to be observed also, that American savages could scarcely avoid putting their prisoners to death, as they had no prisons to detain them ; nor could they sell them as slaves, as European savages did ; nor could they maintain them when they themselves were often distressed for food ; yet they often incorporated them in their own society, when any family consented to such adoption. To inspire terror is the policy of savages, and this object is so fully attained by these cruelties, that wars have of late been very unfrequent among them. The humane usages that at present prevail in civilized nations, are chiefly derived from tacit consent, and the mild influence of Christianity, as Grotius has shewn. That the accounts transmitted to us, from the first visitors of America, of the manners of its savage inhabitants, are, for the most part, gross falsehoods, may well be inferred from their misrepresentations, even of the external form of these savages, of which they could have the

* Wolf, see Vattel, *Droit des gens*, preface, p. 16.

testimony of their senses. Yet Doctor Robinson informs us,* “ that the same fables that
 “ were current in the ancient continent, have
 “ been revived with respect to the new
 “ world, and America has been peopled with
 “ human beings of monstrous and fantastic
 “ appearance. The inhabitants of certain
 “ provinces have been described to be pigmies,
 “ of three feet high; those of others to be
 “ giants of an enormous size. Some travel-
 “ lers published accounts of people with only
 “ one eye; others pretended to have disco-
 “ vered men without heads, whose eyes and
 “ mouths were planted in their breasts. The
 “ variety of nature is indeed so great, that it is
 “ presumptuous to set bounds to her fertility,
 “ and reject indiscriminately every relation
 “ that is not perfectly consonant to our li-
 “ mited observation and experience; but the
 “ other extreme of yielding an hasty assent on
 “ the slightest evidence to whatever has the
 “ appearance of being strange and marvellous,
 “ is no less unbecoming a philosopher; as in
 “ every period men are more apt to be be-

* History of America, vol. ii. p. 54. Dub. ed,

"trayed into errors by their weakness in
 "believing too much, than by their arrogance
 "in believing too little. In proportion as
 "science extends, the wonders that amused
 "ages of ignorance disappear; the tales of
 "credulous travellers are forgotten; and the
 "monsters they describe have been searched
 "for in vain."

Hence it is matter of no small surprise, that
 the sage Locke should credit tales just as
 absurd, and on their authority ascribe moral
 sentiments merely to education and custom.
 It is true, his assertion relates only to the *innateness*
 of moral *principles*; and if principles
 be taken for abstract propositions, his assertion
 is certainly true; for the abstract proposition
 cannot precede the sentiments which give
 birth to it. But these sentiments are felt at the
 very idea of injustice in simple cases. Savage
 tribes were assuredly better known to Aris-
 totle, who lived at a period when the greater
 part of Europe was inhabited by savages,
 than they can possibly be to us; and yet he
 acknowledges, *that by a kind of natural divi-*
nation, as he called it, all mankind distinguish,
generally, what is just from what is unjust, in-
dependently

dependently of all social conventions. By *natural divination* he plainly means the dictates of the moral sense.*

780. Nor does the variation of the dictates of the moral sense in varying circumstances any more oppose the belief of the existence of that sense, than the hitherto unexplained variations of the atmosphere destroy the certainty, that it is governed by fixed laws; or the variations of the laws of motion, or of chymical affinities, in certain cases and occurrences. Thus, though unprovoked and vengeful homicide is justly condemned by all men, yet, if committed in one's own defence, it is with equal justice excused.

781. If, from the absurd opinions of some philosophers on moral subjects (of which many are enumerated by Barbeyrac, in his preface to Puffendorf,) we may infer, that uniform notions of morality have no existence; we may with equal propriety conclude, that neither reason nor truth have any real existence; for these also have been denied by ancient and modern sceptics—men of the

* Rhetoric, lib. i. chap. xiii.

greatest abilities. In fact, most of these ancient opinions were built on mere abstract political reasoning, and not on the supposed absence of moral sentiments.

782. The general conclusion from these considerations is, that compliance with the simple and primary dictates of the moral law, has ever been approved by all tribes and associations of mankind, while in a state of peace, and their violation condemned and attended with remorse, unless overruled by superstition; which originating in the delusive phantoms of imagination, can afford no excuse to its abject and no less criminal votaries.

783. As the enormities of savage tribes have been ascribed to their supposed ignorance of the moral law, so the criminality of many laws, customs, and practices, of civilized nations, has, in a subsequent and more improved period of human reason, met with advocates, who, from party attachment, have endeavoured, if not to justify, at least to palliate and excuse these excesses, by reason of their extensive prevalence in the ages which they disgraced.

784. Thus

784. Thus Chauffepied, in his dictionary, article *Servet*, p. 244, after censuring intolerance in the fullest and most decided manner, and consequently disapproving the execution of Servet, yet adds, *mais qu'on ne fasse pas un crime a Calvin d'avoir été dans les memes prejugs que tout son siecle*, as if received opinions, which in other much less plain cases Calvin utterly disregarded, should, in this case, screen him from blame. How much more just and liberal the sentiments of the late excellent George Lord Lyttelton, who after reciting the detestable custom that prevailed in the twelfth century, of punishing the innocent kindred and dependants of a criminal,* adds—"Nothing can justify this proceeding; for that which is contrary to humanity and natural justice cannot be warranted by any authority of *law* or custom." Doctor Robertson, in his History of Charles the Fifth, expresses himself rather incorrectly† on this

* Life of Henry the Second, vol. i. p. 435 & 573. Dub. ed. See also Home's Sketches, &c., vol. ii. p. 347.

† I have said incorrectly, because I am persuaded that he meant only to excuse the ferocious language and manners

this subject; for he asserts, that—" in passing judgment on the character of men, we ought to try them by the *principles and maxims* of their own age, and not by those of another; for, though virtue and vice are always the same, manners and customs vary continually." The *names* indeed of virtue and vice remain unaltered; but if what is virtuous in one age, may by a change of principles and manners become vicious in another, or *vice versa*, I do not see how the *realities* denoted by those names can be called the same. Dr. Robertson would surely be unwilling to apologize for the conduct of Thomas à Becket in the twelfth century, which yet may be sheltered by this maxim. Accordingly catholic writers have not failed to apply it. The learned Mr. Milner, stating the exemption which the clergy then claimed from the jurisdiction of the state, to have been admitted and sworn to by the sovereigns of most Christian countries, asserts, that the primate would have been inexcusable if he had

ners of Luther; for it is on that occasion he lays down that observation: but, as the words extend further, I think the observation inaccurately expressed. See vol. iii. 8vo. book viii. p. 338. Dub. ed.

not

not defended it in a lawful manner ;* and the learned, candid, and impartial writer of the life of Henry the Second, Mr. Berrington, thinks that these maxims, which he allows to be wild, being those of that age, a man of unaffected probity might then maintain them.† And afterwards, after censuring the intemperate conduct of Innocent the Third, he adds, “ the maxims of the age however must not be forgotten ; they will “ throw some veil over the failings of Innocent ; will extenuate the intemperance of his “ measures, and blunt the edge of censure.” ‡ It is however very evident, and might even then with very little attention be discovered, that the rights, and immunities, and superiority over temporal powers, claimed by the clergy in that age, were pregnant with mischief ; and accordingly, both before and after Becket’s time, produced infinite confusion and bloodshed.

785. In the same manner, the right of affording an asylum to the most atrocious

* Milner, letter ii. p. 44. Cork ed. † 1 Berrington, life of Henry the Second, p. 204. ‡ Vol. ii. p. 309.

criminals,

criminals, claimed by Christian princes for the dwellings of their ambassadors at Rome, was such a gross violation of true religion, and of the tranquillity and good order of society; of regular jurisdiction; and of the independence of a sovereign state, as might instantly be perceived, and therefore incapable of extenuation from the habits of the age; yet Lewis the Fourteenth claimed and enforced this right, even in the seventeenth century; to say nothing of a still more outrageous and unpardonable exertion and vindication of it in our days.

786. Can any one attempt to palliate the criminality of gladiatorial shows, so long exhibited both in pagan and Christian Rome (proscribed indeed by Honorius, but finally abolished only by the Arian Theodoric,) by reason of their having been practised for upwards of 500 years? In vain would the rights of an erroneous conscience be alleged in extenuation of such enormities; for this excuses only when founded in invincible ignorance, as already said, which cannot be alleged in cases so plainly repugnant to reason and humanity.

787. I omit many other savage practices that obtained in the comparatively dark ages, amply enumerated in the learned and curious treatise of Mr. Ward on the law of nations; which evidently can neither be sanctioned or excused by their universal spread, or the lamentable length of time they have prevailed. One only I cannot omit, as some laws favourable to it still remain in an highly enlightened nation; namely, the practice, or at least the assumed right, of persecution for holding speculative religious opinions, different from, and therefore deemed erroneous, by those in whose hands the sovereignty of the state is lodged. This claim is evidently unjust; for if a *persecutor* thinks himself obliged by the dictates of his conscience to persecute those who avow opinions which to him seem false, and thinks it unlawful to disobey what his conscience thus dictates to him, he should reflect, that the *persecuted* think themselves no less obliged to profess opinions which they judge true and pious—a plea which must be admitted when those opinions are not evidently derogatory of all religion, nor injurious to society; therefore, if the persecutor judges the rights of con-
science

science generally obligatory, he must allow, that those of the consciences of the *persecuted* are equally so, and consequently he cannot violate them without falling into a manifest inconsistency and injustice; he must therefore perceive, that the impulse to persecution cannot proceed from an enlightened conscience, and consequently is not obligatory. Now persecution in such cases being essentially unjust, no oaths can bind potentates to exercise it, nor can judges be excused for enforcing the ordinances (for laws they cannot be called) that command it. Vainly would the pretext of ensuring the salvation of souls be alleged; most Christian sects believe that infants dying after baptism are received into eternal bliss; would it therefore be lawful for any one to put them to death, to procure them this inestimable advantage?

SECTION III.

THAT A VARIETY OF OPINIONS ON ANY SUBJECT IS A
SUFFICIENT PROOF OF THE UNCERTAINTY OR FALSE-
HOOD OF ALL OF THEM.

788. This principle is frequently urged by persons, who, either through indifference or indolence, and perhaps often on finding the true opinion inimical to their passions, prejudices, or interests, wish to avoid an accurate examination of any of them.

789. They tell us then, that on mathematical subjects no difference of opinion exists, because they alone, say they, are capable of certainty; whence they conclude, that the reason why disputes occur in other sciences is, that such disputes are not capable of receiving a satisfactory decision.

790. Upon consideration, however, it will be found, that the uniform agreement of mathematicians on *pure* mathematical subjects is not caused by the greater certainty to be found in that science, for we are equally cer-
tain

tain of many physical and historical truths as we can be of any proposition in Euclid, but merely from its being a science merely intellectual, founded on the relation of identity of a proposition with some preceding propositions, and these on the same relation with others, until we arrive at the primary definitions and axioms; and from the clear unambiguous signification of the terms it employs, fixed by sensible signs, as figures or diagrams: where these advantages cannot be found, as in some subjects of mixed mathematics, in explaining the grounds of the fluxionary or differential calculus, or the negative sign in algebra, or the logarithms of negative quantities, &c. mathematicians have entertained various opinions.

791. Many of the numerous controversies that still subsist in other sciences, may, with much greater propriety, be ascribed rather to various extrinsic causes, than to any intrinsic impediment to arrive at certainty.

792. Thus, in *politics*, it has long been questioned, and warmly disputed, whether simple monarchy, aristocracy, democracy, or some mixed forms, were most conducive to
the

the happiness of a nation; at last it was perceived, that the answer depended on various circumstances, which must, in every instance, modify, limit, and restrain, the application of general principles, and consequently the question (not from the uncertainty of those principles, but from their necessarily diversified application,) was incapable of a general solution; inattention to the modifying circumstances had alone occasioned a difference of opinion. Are we therefore to conclude, that in particular cases, no satisfactory decision can be had? Experience has long since proved the contrary.

793. In *theology*, antecedently to the birth of Christ, various superstitions have indeed prevailed, but as few of them (namely those of the Persians and Egyptians) have been intolerant, it does not appear, that these religionists entered into any controversy with those who held opposite tenets, or submitted their opinions to the test of reason, but rather blindly assumed them from education, and adhered to them merely through veneration for their ancestors, from whom they received

F f

them.

them.* Yet, though all these opinions were certainly false, it does not follow, that these being set aside, no truth was attainable on this subject; for, many of the most important truths of natural religion, might, with cool and unprejudiced attention, be discovered; but in fact few took the pains, or pursued the right method of arriving at their knowledge.

794. Since the birth of Christ, Jews, Christians, and Mahometans, have maintained very different opinions; but the Mahometans maintained theirs, rather by the sword, than by peaceful argument. The controversy we have with the Jews, might be brought to a speedy decision, could they be induced, as many of their ancestors have been, to pay more attention to the proofs derived from miracles, and to the high degree of moral certainty of the reality of those miracles; but strong and early prejudices, perhaps, also, some interested motives, seem to have hitherto rendered them adverse to all examination and discussion.

795. With respect to the disputes of the

* See No. 387.

various Christian sects with each other, the case is not very different. Some of them originated in that religious insanity, called *fanaticism*, and soon died away. Others of them, owe their continuance, at least, to establishments, and the impolitic interference and support of civil powers. If mere simple Christianity, such as all Christian sects contend for, in their disputes with deists, were alone established, the whole of the gospel morality, and its sanctions, would be preserved; which is all that any government can be interested in, and consequently require.* Such of the present controversies as are capable of a satisfactory decision, would in that case soon + cease.

796. In *natural philosophy*, since mere theoretic systems have been abandoned, the want of sufficient data, and of proper instruments, have been the chief obstacles to uncontested conclusions; in proportion as these have been acquired by men of superior talents, as Newton, Boyle, Halley, Hales, Boerhaave, Stahl,

* See Locke's Treatise on the reasonableness of Christianity.

Margraf, Black, Priestley, Cavendish, Bergman, Scheele, Franklin, Lavoisier, Klaproth, Werner, Guyton, Berthollet, Vauquelin, De Luc, Saussure, &c. a perfect uniformity in numberless instances has taken place.

797. Though of all sciences, metaphysics has been the most contentious, yet there is none which has disclosed more important truths, none whose controversies, when at last brought to a proper issue, have contributed so much to the cultivation of the human understanding, or freed mankind from more absurd or atrocious errors, whose inanity or turpitude it has developed and demonstrated. It has irrefragably evinced the existence, unity, and attributes of the Supreme Being; rendered the immortality of the human soul, at least highly probable; and has annihilated, at least in the minds of the unprejudiced, the fatal doctrine of materialism, that fruitful parent of numberless errors, inconsistencies, and contradictions; and extricating human reason from the mazes and subtleties of scepticism, as well as from the idle dreams and terrors of superstition, has at last established its independence, and the supremacy

supremacy of its jurisdiction in all cases whatsoever, intelligible by man.

798. To effect these important purposes, the futility of our earliest and most inveterate prejudices must have been made evident. The inaccuracy of judgments deduced from sensible appearances, insufficiently examined, must have been demonstrated; the ambiguity of terms long abusively, or improperly applied, must have been detected, their signification strictly discriminated, ascertained, and inviolably fixed. The difficulty of such a task, where nothing could be rendered apparent to the senses, but mere unembodied intelligibilities alone presented, is sufficiently evident. Yet it has been happily accomplished by the successive efforts of Locke, Berkeley, Merian, and Condillac; insomuch, that few of the idols of the *tribe*, the *den*, of the *market*, or of the *theatre*, as Bacon quaintly calls them,* still remain undemolished.

799. Hence,

* Idols of the *tribe*, are false notions founded in human nature; idols of the *den*, are those peculiar to certain individuals or classes; idols of the *market*, are words in their usual, but false signification; and idols of the *theatre*, are false

799. Hence we see, that, from a variety of opinions on any subject, we should not immediately conclude, that none of them is true, or, that truth is unattainable on such subjects; but merely that its discovery demands examination and discussion, or perhaps more numerous *data*, which time and experiments may furnish, though at present unknown.

SECTION IV.

THAT SOVEREIGNS ARE OBLIGED TO MAINTAIN BY FORCE THE RELIGIOUS OPINIONS ESTABLISHED IN THEIR DOMINIONS.

799^b. For, first, speculative opinions should be maintained by arguments and not by force, which can produce no other effect but irritation, or a suspicion that opinions which are so supported, are false; or entire indifference and neglect of examination; and thus, in effect, no conviction of their truth being had, they are the opinions of the nation only in appearance.

false philosophic theories. 1 Shaw's Abr. of Bacon, p. 132, and *ditto*, 351.

Secondly,

Secondly, this maxim would prevent the introduction of Christianity into any country.

Thirdly, this maxim is equally applicable to false and to true religious opinions ; for no sovereign thinks his opinions false ; and if so applied, truth can never find admission into countries professing the most absurd opinions, whether Pagan or Mahometan ; and in effect conversion cannot be effected in Japan, or Mahometan countries.

CHAPTER X.

OF SOPHISMS.

800. A sophism is an erroneous argument, proceeding either from misapplication, or misconception, or a mistake of the general principles of reasoning.

1. *From Misapplication.*

801. As where an argument is applied against a point, which is not the subject

of the debate ; this logicians call, *ignoratio elenchi*.

802. Thus, the point in dispute between the primitive Christians and the polytheists was, whether there was one God only, or many Gods. Symachus argues, that their ancestors adored a plurality of Gods, and were always victorious ; which was foreign to the subject debated. Besides, the nations they conquered, were also polytheists, and the Greeks in particular worshipped the same Gods.

803. So Paschal, arguing against atheists, insists, that atheism is more dangerous than theism. Whereas, the point in debate is the *truth*, and not the prudence of either system. Some Christian sects use the same argument against each other.

2. *Misconception.*

804. As when an argument is employed, which presupposes the truth of the point in debate to be on one side, without proving it. This sophism, logicians call, *petitio principii*.

805. Thus,

805. Thus, the Jews argue, that Jesus could not be the Messias, because he did not appear as a victorious prince, as the prophecies announced he should, taking for granted, that the prophecies should be understood in the literal sense, which is the point denied by Christians; not only because of the miracles of Christ, which proved him plainly to be the Messias, but because the literal accomplishment of the prophecies, could occasion no change of the depraved moral state of the world, and therefore could not be the true sense of those prophecies.

Thus, when necessarians say, that the mind is always influenced by the preponderant motive, if any motive appeared to be so before, as well as after election, their position would be just. But they infer the preponderance of the motive before election, from its appearance after the election, to have been that with which the will complied. An inference which is a mere *petitio principii*, assuming that for true, which their opponents deny.

806. Nearly allied to this undue assumption of the principle in debate, is that mode
of

of argumentation called a *vitious circle*, in which one point is proved by another, and this other is proved *solely* by the first; so that the proofs are mutual, and under the same point of view.

807. Thus the sceptics argue, that we ought to doubt of every thing, because human reason is fallible, and may deceive us. And since reason may deceive us, we should doubt of the validity of the reasons that induce us to doubt.

808. Thus Aristotle asserted, that the stars seem to twinkle, on account of their immense distance, and asserted, they were immensely distant, because they are seen to twinkle.

809. Thus Descartes formed a vitious circle, when having proved that God exists, because existence is contained in the clear and distinct idea which we have of the Supreme Being, he afterwards derived the certainty we have, that such ideas cannot deceive us, from the incompatibility of such deception with the goodness of the Divine Being.

810. It is also commonly said, that Catholics form a vitious circle, when they prove the authority of their church, by the authority of the
the

the Scriptures, and the authority of the Scriptures by that of their church. But, in fact, the authenticity, and consequently the authority of the Scriptures is proved by the testimony of Christians of all sects, that is, of all those who professed Christianity since the apostolic age, unto the present day; and undoubtedly, the Roman and Greek Catholics have their share in this *testimonial* authority, which should be carefully distinguished from *doctrinal* authority. And as the *doctrinal* is not proved by the *testimonial* authority, nor the *testimonial* by the *doctrinal*, there is no circle or reciprocation of proofs. But, if the *doctrinal* authority of the Scriptures were attempted to be proved by the *doctrinal* authority of the church, and the *doctrinal* authority of the church by that of the Scriptures, then there would be a circle.

Ask the astronomer, how he judges motion at any time, to be uniform? he will say, by its passing over equal spaces in equal times, as pointed out by the clock. And, if again you should inquire, how he knew his clock kept equal time? he would answer, by being adjusted to the motions or periodical appearances

ances of the heavenly bodies. But, if he is further pressed for an absolute proof of the equability of their motions, he would confess, that no such proof existed. It may appear preposterous, that the equability of motion in the heavenly bodies should be judged of by clocks, and that these, in their turn, should be adjusted to the motions of the same heavenly bodies. The method is, however, founded in reason. For the uniformity, or deviation from uniformity, of motion in the heavenly bodies, may be ascertained to a certain degree, by a competent number of observations made with clocks; because such observations may be made mutually to correct each other; and thereby, not only to point out the regularity, or otherwise, of the motions in question; but further, may shew them to be more so, than any one of the time-keepers themselves; and, consequently, fit to adjust even these, in their turn. Watson on time, p. 103.

3. *A defective Enumeration, and an erroneous Generalization.*

811. Of all errors, this is perhaps the most common. Thus, if a person is found guilty by a jury, it is inferred by some, that he really was guilty, or by others, that the jury was culpable which found him so; whereas, it sometimes happens, that the culprit is innocent, and yet the jury not culpable, being deceived by false witnesses. The real causes of many important events are frequently unknown, as may be proved in numerous instances; those, therefore, to which alone they are attributed, or deemed to be attributable, are imperfectly enumerated; our decision can reach at most to a probability, and not to a certainty.

812. There are few properties invariably, that is constantly, found in all bodies, namely, gravity, mobility, and the vis inertiae. The supposition, therefore, that the general characters or properties, whether of mankind, or of animals, vegetables, or minerals, or, universally speaking, of any contingent beings, comprehended

prehended under the same general denomination, admit of no exception, is erroneous.

§13. And first, with regard to men, though rationality be their specific character, yet a few are idiots from their nativity. Decrepitude, and the marks of old age, seldom appear before the age of fifty, unless hastened by hardships or intemperance; yet there is a well-attested account of the general stages of juvenility, maturity of mental powers, grey hairs, and decrepitude, having been attained before the age of eight years. The antediluvians, we are authorized to say, lived many hundred years; and, even in latter ages, some attained the age of 160 years. How much different individuals vary from each other, both in disposition, mental abilities, and bodily constitution, need not be mentioned; but, that any of these properties are exclusively confined within certain geographical limits, were a preposterous assertion, though often arrogantly assumed. Unequal degrees of cultivation, and other moral causes, occasion that inequality observable in different nations; yet, a distinguished critic, about the beginning of the last century, made it a question, whether

whether a German could have wit? There is scarce any general property of animals, whether internal structure, nourishment, mode of production, &c. to which many exceptions are not found, in the vermicular and insect tribes. I need mention only the polypi, and sea anemonies.

So in the mineral class, how many, even of the same species, differ from each other in their external appearance and physical properties, as shape, colour, transparency, hardness, weight, electrical and magnetical properties? Who would have believed, that diamonds were not stones, but a species of coal?

814. As those general conclusions are most frequently erroneous, which exclude all exceptions, others are still more egregiously defective, being deduced not from extensive and general observation, but from a few particular instances, frequently accidental. This erroneous mode of reasoning, logicians call *fallacia accidentis*. Thus, some antimonial remedies, having been in a few cases unskilfully prepared, or injudiciously administered, the parliament of Paris issued a
decree,

their cordial regard to their idolatrous neighbours, nor weaken their allegiance to their heathen sovereigns; for whose prosperity, on the contrary, they constantly prayed * and often fought.

Thus also several have endeavoured to rank under this species of sophism, the attempt to apply some evident philosophical truths to certain mysterious theological doctrines, as if, though true in philosophy, they could be false when applied to certain mysteries. See Leibn. 77.

5. *Mistakes of the Collective Sense for the Distributive, or the Distributive for the Collective.*

817. The universal term *all*, is applicable either to the parts, of whatever it denotes, *assembled* together, or to each of those parts singly considered; the former is called the *collective*, the latter the *distributive* sense of that term and of other equivalent terms.

Thus when it is said, that *all the members formed in committee*, or that *all the soldiers*

* Tertullian Apolog. p. 194, 197. Eng. Edit.

formed

formed a square, who could think that each member was a committee; or each soldier a square? yet as absurd mistakes have been committed. So when it is said that *the British fleet is invincible when not considerably outnumbered*, it is not meant that *each* ship in the fleet is invincible, but only the whole *collectively*; and on the other hand, it does not follow, that because each ship may be sunk in a naval engagement, that the whole fleet may be sunk or conquered; nor because every fibre composing a cord or cable may easily be broken, that all of them collectively may be easily broken.

So when Dido, in the 4th *Æneid*, tells *Æneas, omnibus ambra locis adero*, all here does not signify in all places collectively, but distributively.

818. Sometimes an universal proposition is true, both in the collective and distributive sense; thus the proposition *all men are mortal* is equally true in both senses; and this always happens when any property of the distributive state receives no alteration in the collective state; thus 1000 men assembled together, cannot perceive a distant object

more distinctly than one man; but it is otherwise where the powers of individuals are increased by their union; thus, 20 men will draw a load which one man cannot move; so, the opinion of three or more skilful and impartial persons, is commonly preferable to that of one only, as in the discussion they enlighten each other; hence consultations of physicians, counsellors of law, &c.

819. In general, the *relative* properties of the parts, taken distributively, should not be attributed to the whole which they compose, nor those of the *whole* to each part; hence the fallacy of the ancient sophism, *three and two are odd and even numbers; now three and two are five, therefore five is a number, both odd and even*; for five is a name that expresses the collective only; so, though the parts that compose the whole are *invisible*, it does not follow that the *whole* is invisible, &c.

820. Some propositions are *metaphysically* universal, denoting some essential property, as that *all circles are round*; these admit of no exception: some are *physically* universal, that is, in the usual course of nature, as that *all*
men

men are rational, or have two hands ; these admit of some exceptions ; for some are idiots from their nativity, and some are born without hands : some are only *morally* universal, as that *all women are talkative* ; these admit of numerous exceptions.

821. Sometimes universal propositions are to be understood with a tacit restriction ; thus, when Christ is called the *Saviour of the world*, it is not to be understood, that all mankind will be saved, but only, that all that are saved, are saved only through his merits. So, when it is said, Gen. chap. 1, that God gave Adam for food, *all* herbs bearing seed, it is to be understood only of such as were eatable, which an angel probably taught him to distinguish ; so, when it is said, Mark v. 20, *all men did marvel*, the meaning is, all who heard of the miracles of Christ.

6. *False Inferences from Contrary or Contradictory Propositions.*

822. An argument deducing contradictory consequences from contrary causes, or from

contradictory propositions, is fallacious and sophistical.

823. Thus, when it is said, *a white colour is visible, therefore a black colour is invisible*, the consequence is false; for though white and black are contrary to each other, yet they agree in visibility; so, though avarice and prodigality are opposite, yet both are odious; so it does not follow that as virtuous princes are respectable, that vitious princes should not also be respected, &c.

824. So, if we *do not believe* that Nero set fire to Rome, though Tacitus affirms it, surely it does not follow that we *should believe it* if Tacitus *denied it*. Here, and in the subsequent examples, affirmation and denial are contradictory, yet contradictory consequences do not follow from them.

825. So we *do not believe* that Attius Navius the augur cut a flint (or rather a hone) with a razor, though all the Roman historians *affirm it*, * much less should we be tempted to believe it, if all the Roman historians *denied it*.

* See Hook's Roman History, vol. i. book i. chap. vi. sect. 5.

826. So, few interpreters, whether Catholic or Protestant, believe the Jewish law to be still obligatory, though Christ expressly affirmed, that he came not to repeal it, but to fulfil it; and that every tittle of it should remain as long as the world lasts;* yet it does not follow that we should affirm it to remain, if Christ had *denied* that it should remain.

827. Again, *Trajan was a good prince*, *Trajan was not a good prince*, are contradictory propositions; yet to infer from the first, that *only some* of his actions were just; and from the second, that *all* his actions were unjust, were false inferences, though contradictory to each other.

828. I do not mean that two contradictory propositions can be false; for, in reality, that *all* his actions were just, is *false*; witness his persecution of Christians; and that *some* of his actions were unjust is *true*. I only mean, that the inferences are not properly drawn; for instance, the first: the proper inferences should be from the first proposition, that *all or most* of his actions were just; and

* Matth. v. 17, 18.

from the second, that *none* of his actions were just; or at least that *most* of them were unjust: these are *contrary* propositions, if we use the words *all*, *none*, and both are false; but if we use the word *most*, they are only *sub-contrary*, and one is true, and the other false.

829. Thus we see, that a false consequence may be improperly deduced from a true proposition, unless it be syllogistically deduced; for a consequence is not contained in a single proposition, except by conversion, but in two premises either expressed or understood. Thus, if it be said, *the apostle Peter was a saint, therefore he never sinned or erred*, the consequence is false, for he both sinned in denying Christ, and erred after the promise made to him, *that on this rock I will build my church* (if it should be so interpreted,) and after receiving the Holy Ghost, &c. It must here also be remarked, that the epithet *good* is bestowed on persons whose conduct and views are generally good, though liable to some errors, as in the case of David, &c.

830. Note, also, that inferences that express no more than a bare and *precise denial*
of

of the contrary of what is affirmed in the proposition from whence they are inferred, are just; because a thing cannot be, and not be, at the same time; thus, when it is said, *it is day, therefore it is not night, or sugar is sweet, therefore it is not bitter.*

831. So also an *affirmative* inference is just, if it expresses no more than is implied in the negative proposition from which it is deduced, otherwise it is erroneous.

Thus, if it is said, *Peter is not dead, therefore he is living; the sun is not set, therefore it is day*; all these are just inferences.

But if it be said, *Peter is not a prodigal, therefore he is a miser*; or *vinegar is not sweet, therefore it is bitter*; these are false inferences, because they not only express the denial but add to it.

7. *Passing from the Conjoint to the Disjoined Sense, or Reciprocally.*

832. This happens when, from the impossibility of a change taking place at the same instant of time, it is inferred, that it cannot take place at different periods of time; this
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the schoolmen call *fallacia compositionis*; or when a change that must take place at different periods of time are falsely understood or attributed to the same period of time.

833. Thus, when Zeno inferred, that a body at rest cannot move, this is true, *while* it is at rest, or at the same instant in which it is at rest; but false, if understood of separate instants. In these cases three instants should be distinguished; the first in which the body is at rest; the second in which the cause of change is introduced; and the third in which the change takes place. The cause of change cannot be introduced in the first instant, for the introduction of such a cause, is itself an inceptive change, and this cause must precede the complete change.

834. So when it is said, *that slanderers, &c. cannot enter into the kingdom of heaven*, it is to be understood, while they continue in that guilt, and do not wipe it off by repentance.

835. So, when it is said, that the *predestined cannot be condemned*, the meaning is, that you cannot suppose them both predestined and condemned at the same time; that is, both suppositions cannot stand together,

no

no more than that of rest or motion, but both may stand separately; for, abstracting from the certainty of their salvation, it is equally certain, that they retain the power of incurring condemnation as long as they live; thus, though it is certain that the sun rose yesterday, yet it is equally certain that God had the power of preventing it to rise yesterday.

836. The other branch of this sophism is called *fallacia divisionis*: it consists in attributing to all the parts taken collectively, that which is truly attributed only to all the parts taken *distributively*; thus, though each man in London may die this week, yet it would be absurd to suppose, that all the men in London should die this week; for though it be physically possible, yet it is morally impossible. So, though it is physically possible that each copyist of the holy Scriptures should err or mistake some material passage, yet it is morally impossible that all the copyists should so err or mistake, as there are many thousands of them.

837. Or in denying *that* to a *collection* of all the parts, which yet may well be denied
of

the cause of its existence or destruction. And as many things tend in different ways to produce the effect, causes are variously distinguished from each other; only six of these distinctions need here be mentioned, namely the *efficient*, the *occasional*, the *conditional*, the *final*, the *physical*, and the *moral*.

843. An *efficient* cause is that whose action is alone sufficient to produce the effect; this sufficiency is made known to us, either by the definition of the being that possesses it, or by consciousness; it is called *power*.

844. Hence there are but two efficient causes naturally known to us, namely, *God*, in whose definition omnipotence is included, and the *human soul*, of whose power to produce its own volitions we are conscious. All other *physical* or corporeal causes, as they are called, are nothing else but applications of the Divine will to the production of an effect on certain occurrences, constantly, universally, and uniformly, in the same circumstances: these applications, when traced in different subjects, each to one general connecting principle, are called the *laws of nature*; and the bodies through whose intervention, in conformity

formity to these laws, the effect is produced, are called *occasional or secondary causes*, and the conditions on whose presence or absence the production of the effect depends, are called *conditional causes*, or necessary conditions; *conditio sine qua non*.

845. *Occasional causes*, though in reality, inactive, yet being the only that are perceptible, either by the senses or the imagination, are simply called *causes*, by most philosophers, and so I shall continue to call them, in conformity to the received language, but still retaining the true meaning, as we do in speaking of the rising, setting, and motion of the sun.

846. As every newly-existing object is preceded by objects or circumstances which we deem its causes, most modern philosophers define *causes* (meaning efficient causes) to be nothing more than such previous circumstances as constantly and invariably are followed by an effect;* yet many circumstances constantly, uniformly, and universally precede effects, of which they cannot be deemed the causes. Thus, night precedes day, smoke

* Priestley, *Philos. Necessity*, p. 11, 18.

precedes

precedes the combustion of vegetables, effervescence precedes the solution of limestones; for the carbonic acid must be expelled before other stronger acids can unite to them; effervescence is not the cause, but the condition on which the solution depends, and a *sign* thereof. Surely *privations* cannot be the efficient causes of any thing, yet the privation of food or of air will occasion the death of animals; the privation of *light* will be followed by the blanchiffment of fundry plants, &c.; they are only the conditions on which other appearances depend, or on which other causes act. All the powers of inanimate nature may, in their last result, be resolved into attraction, repulsion, and impulse, variously modified; all act at given distances; thus light is reflected at a certain minute distance from the reflecting body; large masses of matter, such as the planets; act at the greatest distances; magnetic and electrified bodies at very perceptible distances; and chymical affinities at the least.

847. But though the mere priority of an object, and the subsequent existence of an effect, even when constant and uniform, be not
sufficient

sufficient to induce us to deem that object the cause of that effect; and that, therefore; *post hoc ergo propter hoc*, is a sophism; or false reasoning; yet, it is also certain, that where, in the greater number of cases, this succession has not been observed to take place, there is not a shadow of reason to suppose, any preceding object to be either a cause, or a sign, of any future event. Hence the absurdity of supposing comets or eclipses to be either causes or signs of subsequent disasters. The celebrated Bayle, in his *Pensées sur les Comètes*, has enumerated the misfortunes that have happened the years in which comets have been seen, and compared them with the events of many subsequent years, to destroy this illusion at the time in which it universally reigned; but, as it has long since vanished, it is unnecessary to dwell upon it. It originated, not in rational observation, but in that fear which all grand and new appearances naturally inspire into beings so weak and impotent as man. Even inferior animals are not strangers to it.

848. Another branch of this sophism con-

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sists

lists in assigning as causes, some phrases or words, void of any intelligible meaning. Thus, atheists ascribed the admirable structure of the planetary system, and of animals and vegetables, to *blind chance*; the peripatetics asserted, the *horror of a vacuum* caused the ascent of water in pumps, and many other particular occult causes.

Necessarians also constantly mistake final and conditional causes for efficient causes, and *moral* causes for physical. Final causes, are the particular ends which the will pursues; the conditional, are the reasons on the view of which the mind acts, that is, forms its volitions, but which have no more a physical activity, than the view of a rough and smooth road, in determining which to follow.

CHAPTER

CHAPTER XI.

OF TECHNICAL MODES OF REASONING.

849. These are fyllogisms, enthymems, epicheremas, forites, dilemma, and induction. But, the principal of these is the fyllogism.

SECTION I.

OF SYLLOGISMS.

850. A fyllogism is an argument, consisting of three propositions, the last of which is deduced from the two former, and if it be regular, is in fact contained in them. This is the great advantage of the fyllogistic mode of reasoning. For, by it, the framer himself discerns the conclusion, and the opponent, if he grants or denies the two first propositions, must grant or deny the conclusion, or shew that the fyllogism is not in form, that is,

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irregularly

irregularly constructed. The whole force of an argument is stated with precision, and the attention is not dissipated by prolix, involved, and vague declamation. Hence, our ablest reasoners have always sought to present the final result of a long chain of reasoning in the syllogistic form.

851. Syllogisms are of three sorts, simple, complex, and composite; the following rules, which I abridge as much as possible, are applicable to all of them; but, before I state them, it will be proper to remind the reader of some observations already made in the first part of this work.

Preliminary Observations.

852. First, an *affirmative* proposition is that of whose subject something is affirmed, and a *negative* proposition is that of whose subject something is denied.

853. Secondly, a *singular* proposition is, in syllogistic reasoning, considered as an universal one, because the subject is taken in its whole extent.

854. Thirdly, an *indefinite* proposition, is that in which the extent of the subject is not defined

defined by the signs of universality or particularity, but by the nature of the connexion betwixt the subject and the predicate, see N° 109. It is to be taken as universal, when the connexion is essential, and the word *all*, *every*, or *none*, may be added to the subject; it is taken *particularly*, when the connexion is contingent or denied, the words *some*, or *few*, or *many*, or *most*, or *several*.

855. Fourthly, the *predicate of an affirmative* proposition, is always taken *particularly*, even though the proposition itself should be universal. N° 103.

But the predicate of a *negative* proposition is always to be taken *universally*.

Note also, that an *affirmative syllogism*, is that, whose conclusion is affirmative; and a *negative syllogism* concludes negatively.

This being premised, we may lay down the following principles.

1. *Principle.*

856. In *affirmative* syllogisms, the applicability of two expressions* to a third expression,

* I have substituted *expressions* for what others called notions or ideas, and *applicability* for what others call agreement or coincidence.

called the middle term, either universally or particularly, is affirmed in the two first propositions; namely, the applicability of one of the expressions to the middle term, in one of the two first propositions, and of the other expression to the middle term, in the other proposition; and thence the applicability of the two expressions to each other, either universally or particularly, as the case may be, is inferred in the third proposition. According to the axiom *que sunt eadem unitertio sunt eadem inter se.*

2. Principle.

857. If the *sylogism* be negative, then the applicability of one of the expressions to the middle term, either universally or particularly, is affirmed in one of the premises, and the applicability of the other expression to the middle term, either universally or particularly, is denied in the other proposition. And hence the applicability of the two expressions to each other, whether universally or particularly, as the case may be, is denied in the third proposition; that is, the conclusion, according to the maxim, *duo non conveniunt inter*

*inter se nec sunt quid idem, cum uni aliquid
convenit, quod repugnat alteri.*

3. Principle.

858. Hence it is plain, that the middle term should be found in both the premises, but never in the conclusion, where it would be superfluous, and by this mark we may always distinguish it. Yet, it may be introduced incidentally and obliquely, as in No. 882, post.

4. Principle.

859. Secondly, that it should have the same sense or signification in each of the premises; for, if it had one meaning in one of the premises, and another meaning in the other, then the *agreement* of the two expressions compared with it could not be inferred, as one of them might agree with one of its meanings only, not with the other meaning, with which the other expression might agree, and thus in fact there would be two middle terms instead of one.

5. *Principle.*

860. Thirdly, that it should be taken universally, in at least one of the premises; for, if it were taken particularly in both, it might agree with one of the expressions, with respect to some particulars, and agree with the other in other particulars, and thus there would in fact be two middle terms, as in the former case.

861. But, it must be remembered, that this danger does not occur, when a *singular* proposition is employed, this being considered as universal.

862. Nor even when *definite* propositions are employed, because the identity of the particulars referred to, is determined, and not merely vague and undetermined.

6. *Principle.*

863. That neither of the two expressions, whose applicability to each other is inferred or denied in the conclusion, can be taken more extensively, nor differently in the conclusion than they were in the premises; so, that

that if either of them was taken particularly in either of the premises, the concluding proposition must also be particular.

7. *Principle.*

864. That from two negative propositions nothing can be inferred ; for, from this, that one of the expressions is inapplicable to the middle term, and the other also, it cannot follow that they are applicable to each other.

8. *Principle.*

865. From two affirmative premises, a negative conclusion cannot be drawn ; for, if one of the expressions is applicable to the middle term, in one of the premises, and the other in the other, they cannot be inapplicable to each other in the conclusion.

866. Every syllogism should be constituted agreeably to these principles ; and the premises and conclusion should be formed according to one or other of the following rules.

RULES.

PREMISES.	The conclusion may be,
1.	
867. From two general affirmative propositions,	A general affirmative.
2.	
868. Two general affirmatives,	A particular affirmative.
3.	
869. One general affirmative, and one particular,	A particular affirmative.
4.	
870. One general affirmative, and one general negative,	A general negative.
5.	
871. One general affirmative, and one general negative,	A particular negative.
6.	
872. One general affirmative and one particular negative,	A particular negative.
7.	
873. One general negative, and one particular affirmative,	A particular negative.

Examples

Examples of these Rules.

Of the 1st.

874. All animals are mortal, all men are animals, therefore all men are mortal.

Of the 2^d.

875. All sciences are useful, all sciences are difficult, therefore some difficult things are useful.

Of the 3^d.

876. All traitors deserve punishment, some Christians are traitors, therefore some Christians deserve punishment.

Of the 4th.

877. Nothing shameful should be practised, all fraud is shameful, therefore no fraud should be practised.

Of the 5th.

878. All attempts to make mankind happy, are praise-worthy, no such attempts have hitherto

hitherto been successful, therefore some praiseworthy attempts have not been successful.

Of the 6th.

879. All amusements afford pleasure, but some amusements are not proper, therefore some pleasures are not proper.*

Of the 7th.

880. No liar is worthy of credit, some Jews are worthy of credit, therefore some Jews are not liars.

Examples of singular Syllogisms.

Of the 1st Rule.

881. *The only son of Philip king of Macedon; (or whoever was the only son of Philip), conquered the Persian empire; Alexander was the only son of Philip, therefore Alexander conquered the Persian empire.*

Of the 2d.

882. *Luxury introduced effeminacy, effeminacy occasioned the ruin of the Persian empire, there-*

* As gladiatorial shews, bull baiting, &c.

fore

fore luxury introduced that which occasioned the ruin of the Persian empire.

Here *luxury and effeminacy* are considered as single objects, therefore the propositions are singular.

Of the 3d.

883. *Anacharsis was a Scythian, Anacharsis was a philosopher, therefore some philosopher was a Scythian; or therefore some Scythian was a philosopher.*

Of the 4th.

884. *The practice of the doctrine of Christ leads to final happiness, the practice of the Epicurean doctrine does not lead to final happiness, therefore the practice of the Epicurean doctrine differs essentially from that of the Christian doctrine.*

Practice is considered as a single object.

Examples of definite Syllogisms.

Of the 1st Rule.

885. *Civil dissensions caused the ruin of the Grecian states; trifling interests produced THOSE dissensions,*

diffensions, therefore trifling interests caused the ruin of the Grecian states.

This syllogism appears to me just; though two causes are assigned of the ruin of the Grecian states, the one immediate, and the other distant and ultimate, as they are both connected with each other, and *qui est causa causæ est causa causati.*

886. The first proposition, though indefinite, is equivalent to a particular proposition, namely, to *some* civil diffensions; not all those that happened in a course of ages, but *those* that existed during the reign of Philip of Macedon; the second proposition is also in appearance particular, for it was the trifling interests that then existed, and not those that had long before existed, that produced these diffensions. The term *these*, renders the proposition definite; and the syllogism developed runs thus: Some civil diffensions caused the ruin of the Grecian states; some trifling interests produced these diffensions, therefore *these* trifling interests were the cause (or the ultimate cause) of the ruin of the Grecian states.

SECTION II.

OF VICIOUS OR IRREGULAR SYLLOGISMS.

887. A vicious or irregular syllogism; is that in which any of the principles or rules of syllogistic reasoning is transgressed. Commonly, it is some or other of the principles that are violated, though any rational person may commonly discern their fallacy, yet that is not sufficient when we argue with an obstinate opponent; the principle or rule transgressed, must be pointed out. Hence, I here give some examples.

Example 1st.

888. *All Englishmen are lovers of liberty, no Dutchman is an Englishman, therefore no Dutchman is a lover of liberty.* Here the 6th principle is violated; *lovers of liberty* being the predicate of an affirmative proposition, is taken particularly in the first premise; yet it is taken universally in the conclusion, being the predicate of a negative proposition.

Example

Example 2d.

889. An apparent exception to the 6th principle. *Commoners alone are eligible into the lower house of parliament; no peer is a commoner, therefore no peer is eligible into the lower house of parliament.* This syllogism is regular. Here *eligible*, &c. is apparently taken particularly in the first premiss, being the predicate of an affirmative proposition. But, it being an *exclusive* proposition, it includes a negative, being equivalent to *commoners are eligible, and none but commoners are eligible*, &c. therefore it is taken generally in the first premiss, being the predicate of a negative proposition, as it is in the conclusion.

Example 3d.

890. *Some commoners are merchants, no peer is a commoner, therefore no peer is a merchant.* Here the violation of the 6th principle is evident, merchant being expressly particular in the first premiss, and general in the conclusion.

Example

Example 4th.

891. *Every metal is a mineral, every stone is a mineral, therefore every stone is a metal.* Here the 5th principle is violated; *mineral*, which is the middle term, not being taken generally, in either of the premises, it being the predicate of an affirmative proposition, (and consequently to be taken particularly) in each of them.

Example 5th.

892. *All animals were in Noah's ark; Bucephalus was an animal, therefore Bucephalus was in Noah's ark.* Here the 4th principle is transgressed; for *animals*, the middle term, means evidently the animals existing at the period of the flood, in the first proposition, and in the 2d, it denotes an animal, existing many ages after the flood; to say nothing of the falsehood of the first proposition, for only pairs of each species were in the ark; but here the form only is in question.

Example 6th.

893. *He who does not study will not become learned; Titius does not study, therefore Titius will not become learned.* This syllogism is perfectly regular, though apparently contrary to the 7th principle; for, the first proposition is equivalent to an exclusive proposition, as *students alone will become learned*; that is, *students, and none but students, will become learned*; but *Titius is not a student*, therefore *Titius will not become learned*.

SECTION III.

GENERAL CONSEQUENCES RESULTING FROM THE
SYLLOGISTIC FORM:

1st. That the syllogism being in form, that is, duly constructed, if the premises be true, the consequence must also be true, for it is contained implicitly in the premises; or, in other words, a false conclusion cannot be drawn from true premises.

2d.

2d.

895. If both or any of the premises be *false*, a true conclusion cannot be drawn from them, for a true conclusion cannot be contained in such premises; truth and falsehood being incompatible with each other.

3d.

896. If both the premises be possible, necessary, certain, or probable, the conclusion also must be possible, necessary, probable, or certain; but if one of them be barely possible or probable, the conclusion will be barely possible or probable, and *a fortiori* it must be so, if both the premises be barely possible or probable; for the connexion with the middle term is barely possible or probable, as the case may be.

Example.

897. If the barometer falls we shall have rain; but the barometer has fallen, therefore we shall have rain.

Here the 2d proposition is certain, but the first is only probable, therefore the conclusion is only probable.

898. If both the premises be barely probable, the conclusion will be only the probability of a probability.

Example.

899. I have been told the barometer has fallen, (that it has fallen as I am told;) but if the barometer has fallen, we shall have rain, therefore we shall have rain.

Here the probability of rain is compounded of the probability of the barometer's having fallen, and of the probability that this fall will be followed by rain.

4th.

900. Conversely if the *consequence* be duly extracted from the premises, these must possess the same qualities as the consequence, as to *truth or falsehood, possibility, certainty, or probability.*

SECTION IV.

OF COMPLEX SYLLOGISMS.

901. A complex fyllogism is that in which the applicability of two expressions to each other, is inferred from the applicability of one of them to the middle term, and the connexion of the other with the middle term. Or, secondly, by shewing the applicability of one of them to the middle term, and that the other is comprised within the general signification of the middle term.

Hence we have two cases, of each of which I shall give examples. Yet, in reality, this complexity is only in the mode of expressing the propositions, for in the mind, all these fyllogisms are simple, as I shall shew in each case. Therefore, if any intricacy occurs, they should be simplified. They are by far the most usual, and therefore deserve the greater attention.

1st Example of the first Case.

902. The evils arising from war are numerous, yet wars are often just; therefore, the

evils arising from some just actions are often numerous.

This is simplified thus, *war is the source of numerous evils, yet some wars are just, therefore some just actions are the causes of numerous evils.*

Example 2d.

903. The strongest motives to a virtuous conduct are to be found in the new Testament. A virtuous conduct would constitute the happiness of society; therefore, the strongest motives to what would constitute the happiness of society, are found in the new Testament.

This is simplified thus, *a virtuous conduct is most strongly promoted, by motives to be found in the new Testament; a virtuous conduct would constitute the happiness of society, therefore, what would constitute the happiness of society, is most strongly promoted by motives to be found in the new Testament.*

Example 3d.

904. Christianity forbids servants to obey such commands of their masters, as are contrary

trary to the Divine law. Certain commands of masters, are contrary to the Divine law; therefore, Christianity forbids servants to execute certain commands of their masters.

The first proposition is exceptive, and the syllogism is simplified thus: *Christianity allows servants to execute all the commands of their masters, EXCEPT such as are contrary to the Divine law; certain commands of masters fall within the exception, therefore, Christianity does not allow servants to execute certain commands of their masters.*

Here the exception *commands contrary to the Divine law*, are the middle term. The conclusion is negative, though the premises are apparently affirmative, but the first proposition being exceptive, includes a negative; for, being developed, it runs thus: Christianity allows servants to execute the commands of their masters, *but does not* allow them to execute such commands as are contrary to the Divine law.

1st Example of the Second Case.

905. To protect their subjects is the duty of kings; George the 3d is a king, therefore

to protect his subjects is the duty of George the 3d.

It is simplified thus: *kings are obliged to protect their subjects. George the 3d is a king, (that denomination is suited to him,) therefore he is obliged to protect his subjects.*

Example 2d.

906. The punishment of crimes, is necessary for the welfare of society. Murder is a crime, therefore the punishment of murder is necessary for the welfare of society.

It is simplified thus: *crimes are necessarily to be punished for the good of society, murder is a crime, therefore, &c.*

Example 3d.

907. The Divine law requires legal obedience to kings. George the 3d is a king, therefore the Divine law requires legal obedience to George the 3d.

It is simplified thus: *kings are entitled to respect by the Divine law, George the 3d is a king, therefore, &c.*

Examples

Examples of some Irregular Syllogisms.

1st.

908. We ought to believe the scriptures;
tradition is not the scripture, therefore we
ought not to believe traditions.

Simplified thus, *the scripture is entitled to our belief; tradition is not the scripture, therefore tradition is not entitled to our belief.* *Entitled to our belief*, is the predicate of the first proposition, and is taken particularly; but in the conclusion, it is taken generally, being the predicate of a negative proposition.

2d.

909. He that says the French government is a government, says what is true; but he that says the French government is a good government, says that it is a government; therefore, he that says the French government is a good government, says what is true.

Here, *he that says*, is the subject of the first proposition. *The French government is a government,*

vernment, is the middle term; and *says what is true*, is the predicate. In the second proposition the subject is, *he that says the French government is a good government*; and, *says* (or is saying) is the predicate, and *it is a government*, is the middle term. Here, then, there are five terms, viz. two subjects, two predicates, and a middle term. The second subject and the first predicate only, are found in the conclusion. And the middle term is taken twice particularly; so that it trespasses on every principle.

3d.

910. A Mahometan is not what a Christian is. Now a Christian is a man, therefore a Mahometan is not a man.

Here a *Mahometan* is the subject of the syllogism, *what* (that is *that being which*) is the predicate, and *a Christian is*, the middle term, connected with the predicate by the relative *which*, indicating the relation of *apposition*. In the second proposition, the middle term is the subject, and *a man* the predicate, but it is here taken particularly, being taken according to its comprehension, but not according

arding to its whole extension. And in the conclusion it is taken generally, being the predicate of a negative proposition, in contradiction to the second rule. There are also two predicates; that of the first proposition is omitted in the conclusion. It appears to me also, that the first predicate is ambiguous; for, *is not what a Christian is*, may be understood *that particular being which a Christian is*, or *any thing which a Christian is*. Taken in the first sense, it would be particular notwithstanding the negative, but taken in the second sense it would be general, and I believe that, strictly speaking, it should so be taken. In a word, the predicate is taken particularly in the second proposition, and generally in the conclusion, the conclusion being negative.

4th.

911. To kill a man is a sin. A murderer is a man, therefore to kill a murderer is a sin.

In the first proposition *to kill* is the subject, *a man* is the middle term, and *a sin* is the predicate. The middle term is connected with the subject by the relation of termination.

In

In the second proposition, a *murderer* is the subject, and a *man* the predicate, but the subject in its very denomination involves a *criminality deserving death*, and in this sense only the predicate is applicable to it. The second proposition, thus developed, runs thus: *A man guilty of murder is a man.* Now a *man* in the first proposition denotes an *innocent man*, for every man must be supposed innocent until his guilt is proved; but in the second proposition, man is expressly declared to mean a *guilty man*, therefore, the middle term is taken in two different senses contrary to the first rule, and consequently the syllogism is vitious.

According to Dr. Watts, from whom this syllogism is taken, p. 289, the word *kill*, in the first proposition, signifies to kill *unjustly* or *illegally*, but in the conclusion it is taken *generally*, and therefore not good.

The word *to kill* in the Divine command, denotes in the Hebrew language, killing unjustly, and consequently slaying an *innocent man*, as Grotius informs us. Man is the middle term, it denotes therefore an innocent man in the first proposition; but in the
second

second proposition it denotes a man generally, abstracting from his guilt or innocence, therefore it is not taken in the same sense in both; and thus violates the 4th principle.

SECTION V.

OF THE MODE OF ARGUMENTATION CALLED *reductio*
AD ABSURDUM OR AD IMPOSSIBILE.

912. The ancients had many intricate rules for converting syllogisms couched in one form, into another more intelligible, which, in the present treatise, are all useless except one, which was called *reductio ad absurdum vel ad impossibile*. This they applied when no other mode of reduction could be applied. As this mode of demonstration is frequently used by Euclid and other mathematicians, I shall here explain its artifice. If the premises were admitted, but, on account of their obscurity or intricacy, were difficultly combined, (as sometimes happens in geometry,) and consequently the evidence of the conclusion not clearly discerned, they then reasoned thus: If the
conclusion

conclusion be false, then a proposition contradictory to it must be true, and if it be true, then one of the admitted premises must be false.

Example.

All fraud is prohibited; some sorts of traffic are not prohibited, therefore some sorts of traffic are not fraudulent.

Now if this conclusion be denied, after allowing the premises to be true; then a proposition that contradicts this conclusion, viz. *all sorts of traffic are prohibited*, must be true, and yet it is both absurd and contradictory to one of the above admitted premises, which I shew thus.

All fraud is prohibited; all sorts of traffic are fraudulent, therefore all sorts of traffic are prohibited. Now this conclusion is fairly extracted from the premises, and yet it is clearly contradictory to the second proposition of the first syllogism.

913. It is true that the second proposition of this syllogism was not admitted, but since the conclusion was admitted, any of the premises, from which it is strictly deducible, must also

also be admitted. For, since the conclusion is contained in the premises, if the conclusion be true and regularly drawn, the premises must also be true.

914. To this it may be objected, that mathematicians frequently draw true consequences from false, and even impossible suppositions; but it must be considered, that these suppositions being admitted, involve ratios or relations, which truly and necessarily arise from those suppositions; thus if a man existed with four heads, it would necessarily follow, that he had eight eyes and eight ears. And that the number of his eyes and ears was equal, &c. but then this consequence springs from this supposition, as *admitted to be true*, and not from any connexion with it as far as it is false.

915. The ancient mode of scrutinizing syllogisms, is applicable only to simple syllogisms, and not to the complex. The modern has the advantage in this respect, but it is not accurate.

SECTION VI.

OF THE SCRUTINY OF SYLLOGISMS.

916. The surest method therefore of examining the truth or falsehood of every syllogism, is to simplify it by lopping off all superfluous parts, and to compare its essential terms with the general rules that relate to them; as shewn both with respect to the fallacies of simple and complex syllogisms. In making this analysis, it will be proper to place the most general proposition first.

Secondly, it will likewise be frequently advantageous to convert abstract words into those concretes of which they are the abridgement.

SECTION VII.

OF COMPOUND SYLLOGISMS.

917. A *compound* syllogism is that, whose constituent terms, or propositions, are variously intermixed

intermixed and connected by conjunctive particles. Of these the most worthy of notice, are the *copulative*, the *disjunctive*, and the *conditional*.

Of Copulative Syllogisms.

918. Copulative syllogisms are those which affirm or deny the connexion of two subjects or two predicates in one proposition, by means of a copulative conjunction, and reverse or omit that connexion in the second proposition.

Affirmative.

919. In these the connexion is affirmed in the first proposition, but one branch only of the connexion is affirmed or denied, or one affirmed and the other denied in the second.

Example 1st.

920. Meekness and humility always accompany each other; Moses was meek, therefore he was humble.

Example 2d.

921. Honesty and prodigality never accom-

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painy each other; Cataline was prodigal; therefore he was not honest.

Example 3d.

922. A great statesman must possess great sagacity and strict honesty; Richlieu possessed great sagacity but no honesty, therefore he was not a great statesman.

Note, if the second proposition were "Sully possessed both, therefore he was a great statesman," this would be esteemed a simple syllogism.

Example 4th.

923. The latitudes of London and of Paris are different; the latitude of London is $31^{\circ} 30'$; therefore, this cannot be the latitude of Paris.

Negative.

924. A *negative conjunctive* syllogism, is that of which the first proposition denies the compatibility of two predicates in the same subject. And the second proposition affirms the application of one of the predicates; and the

1104. The probable sense of ambiguous words in laws and charters, is also said to be frequently explained by long usage.* With regard to laws, this method may be just, as they are explained by those who are appointed to explain them; but with regard to charters, it may be fallacious, for the intent of those that framed them, is not necessarily that of those for whom they were framed.

1105. It is also laid down as a maxim in law, that words in a grant are taken most strongly against the granter. This is just, wherever there is any palpable ambiguity, for such words excite a hope, which it would be unjust to excite, and disappoint; but where the ambiguity is not obvious, either to the grantor or grantee, the intention is wanting in the former, and no disappointment can arise in the mind of the latter, and therefore such construction appears unjust. See Paley.

1106. Fifthly, if the sense of a clause be obscure, by reason of an erroneous description, whether of a person, or of a thing, it may be

* Vaugh. 169, Peake on Evidence, 120.

to simple syllogisms, by altering the first proposition without any alteration of the sense; thus, in the first example of affirmative copulatives, we may say, *a meek man is always humble*. And in the third example we may say, *a great statesman should be sagacious and honest*. *Richlieu was only sagacious*, therefore *he was not a great statesman*. So in negative copulatives we may say, *a merciful man cannot be cruel*, &c.

Of Disjunctive Syllogisms.

929. A disjunctive syllogism is that in the first proposition of which, the predicates are *disjunctively affirmed* of the subject, in the first premis; but *one* of them is affirmed in the second proposition and the *other* denied in the conclusion. Or conversely, *one* of them is denied in the second proposition, and the other affirmed in the conclusion.

930. Hence, a *denial* or *alteration* of the statement of *one* of the predicates in the first proposition, must occur either in the second proposition, or in the conclusion; the other predicate remaining unaltered.

Example.

Example.

931. The testimony of the apostles to the miracles of Christ, was either true, or it was false ; but many circumstances prove it *not* to have been false, therefore it was true.

Here, a *denial* of the statement of *one* of the predicates of the first proposition, occurs in the second proposition, for it is asserted *not to be false*, and in the conclusion, the other predicate, *it was true*, remains unaltered. And if the second proposition were, *but it was true*, then the denial or alteration would be made in the conclusion, *therefore it was NOT false*.

932. Hence the irregularity of the following syllogism. It either rains, or it does not rain; but it rains, therefore it does not rain.

933. Here there is no alteration of the statement of the predicates; in the first proposition the conclusion should be, it does not rain, which being harsh language, shews that the predicates should not be so proposed, as to render the alteration of one of them harsh and uncouth; hence this syllogism should be thus

Example.

942. If Nero burned Rome, he was execrably wicked; but he did not burn Rome, therefore he was not execrably wicked.

943. Here the falsehood of the conclusion is apparent; and therefore the consequent is true, notwithstanding the falsehood of the antecedent.

944. If the *consequent be true and granted* in the second proposition, yet the truth of the antecedent cannot be inferred from it, for the consequent may not be necessarily deduced from the antecedent only.

Example.

945. If princes set bounds to their ambition they are happy; Trajan was happy, therefore he set bounds to his ambition.

This consequence is false, for he set no bounds to his ambition.

946. Several other complex propositions may often be converted into the conditional, and considered as such, as *exceptives*; thus *unless you repent you cannot be saved*; or *casual*;

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as all events are necessary because decreed; or complex, as he that does not study cannot become learned.

SECTION VIII.

OF OTHER FORMS OF ARGUMENTATION.

These it will be sufficient to describe.

947. An *enthymen* is a syllogism, one of whose premises is omitted. Thus *the apostles asserted that Christ had risen from the dead, therefore he really did rise after his death.*

948. An *epicherema* is a syllogism, to one or both of whose premises, its proof is added. *The apostles asserted that Christ had risen from the dead, for they saw and conversed with him after his resurrection, therefore his resurrection was not a fiction.* The oration of Cicero for Milo may be reduced to an *epicherema*. See Chambers, *epicherema*.

949. *Sorites* is a series of propositions so disposed, that the predicate of each is the subject of the next, until the conclusion is formed of the last predicate, and the subject of the first proposition. This argument is much

much used by geometricians, and vehement orators.

Example.

950. The apostles proclaimed the resurrection of Christ; proclaiming the resurrection of Christ, they were persecuted by the Jews, and gained nothing; being persecuted, and yet gaining nothing, they must have been sincere; being sincere they were therefore worthy of credit.

951. The first branches of this argument, namely, the proclamation &c. and the persecution, being matters of fact, cannot be proved but by testimony; but the last being an inference from reason, may be converted into a syllogism; thus *they who suffered much and gained nothing by their assertion of a fact they witnessed, must be deemed sincere, but the apostles suffered much, &c. therefore they were sincere.*—Then *whoever are sincere (that is) have no motive to assert a falsehood, are worthy of credit, but the apostles were sincere, therefore &c.*

952. Hence, where not matters of fact but mere reasoning, is the subject of this argument,

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it is in fact abridged syllogisms, each step consisting of the middle term of another syllogism, connected with the conclusion of the last. Thus in the following Sorites, *a miser covets much, he that covets much wants much, he that wants much is miserable, therefore a miser is miserable.* The syllogisms are, *a miser covets many things, he that covets many things wants many things, therefore a miser wants many things.* Again, *he that wants many things is miserable, but a miser wants many things, therefore, &c.*

953. But note, that to render this argument conclusive, no part of it should be equivocal; thus the following is faulty: *he that drinks much sleeps well, he that sleeps well does no evil, he that does no evil pleases God, therefore he that drinks much pleases God.* For, it is evident that he alone that does no evil, having it in his power to commit or avoid it, pleases God, otherwise stones would please God.

954. A *dilemma* is an argument consisting of two or more branches, into which the subject is divided, and extending to the whole the conclusion formed on each branch.

Example.

Example.

955. An ancient philosopher, to prove the misery of human life, reasoned thus: men either obey their passions or they resist them; if they obey them they must be unhappy, for they can never satisfy them; if they resist them, they must also be unhappy, as they must live in a constant state of self denial, therefore human life is necessarily miserable.

956. To render a dilemma perfect, its disjunctive branches should exactly include the whole subject, so as to exclude any other branch, and the conclusion of each should be necessary. Hence the following is defective:

Example.

957. A wife is either beautiful, and then she will make her husband jealous, or she is deformed, and then she will disgust him; then a man should take no wife. Here it is plain that there is a medium between beauty and deformity, and that women may be beautiful, and yet so modest as to afford no just cause of jealousy.

958. *Induction* is an argument, by which
from

from the observation of any property in numerous individuals of the same species, it is inferred that it exists in all the other individuals of that species ; or by observing certain properties in all known species of bodies of the same class, it is inferred to exist in all other unknown species of that class ; or by observing certain properties in all known bodies, it is inferred to exist in all bodies ; so that in fact, except with regard to individual substances of the same species, it is only an argument from analogy.

SECTION IX.

A VINDICATION OF THE SYLLOGISTIC MODE OF REASONING.

959. Having treated so amply of syllogisms, and thereby claimed so much of the attention of the reader to their structure, and the laws of their constitution, it cannot be deemed unreasonable to vindicate their utility against the objections of so great a master of reasoning as Mr. Locke. The principal writers amongst ourselves it is true, as Watts, Duncan, and lately

lately Mr. Dralloc, have paid no regard to the censures passed on this mode of reasoning, for they have not overlooked the laws by which they are governed; but they have taken no notice of the objections made to their use, which compels me to undertake the task of removing them.

960. Mr. Locke on entering on this subject, barely professes to "entertain some doubts, whether syllogism be the proper instrument of reason, and the most useful method of exercising this faculty." But he soon becomes more confident of its inutility; he tells us, "that if we observe the actions of our own minds, we shall find that we reason most clearly, when we only observe the connexion of the proof, without reducing our thoughts to any rule of syllogism, and therefore we may see many men who reason most justly, who know, not how to make a syllogism." To perceive the fallacy of this objection, it is only necessary to observe, that a syllogism is nothing more than a statement of two propositions, from which a third may be inferred; now the connexion or disconnexion of which Mr. Locke speaks, cannot

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be discerned, but by means of two such propositions, either explicitly expressed, as in a formal syllogism, or implicitly contained in a compound proposition. Thus, if I mean to prove that a tyrant cannot be happy, the proof I adduce of the disconnexion of happiness and tyranny, is the fact of a tyrant's being hated by his subjects, and thus reason syllogistically. *A sovereign hated by his subjects cannot be happy, but a tyrant is a sovereign hated by his subjects, therefore a tyrant cannot be happy.* The common inartificial manner of expressing this argument is, *a tyrant cannot be happy, for he is hated by his subjects*; but this is a compound causal proposition which equally involves two propositions, as shewn No. 198; it being presupposed, and therefore needless to assert the general proposition, that a sovereign hated by his subjects cannot be happy. The only difference, then, betwixt this form and the former syllogism, is, that in the syllogism nothing is presupposed, every proposition on which the inference is grounded is fully expressed; but in the compound artificial form, one proposition is presupposed, and its expression therefore deemed needless,
and

and the other two are involved in one phrase. In the *mind* the connexion with the proof is exactly the same in both forms. In the former, the reasoning is developed in express words, in the latter enveloped. In the former, each proposition is distinct, so that if the connexion or disconnexion be controverted, the opponent may deny either proposition; the latter has the advantage of being more concisely presented, but the opponent, allowing some part of the compound proposition to be true, is more embarrassed to disentangle it from the part he may deem false. This inconvenience Mr. Locke himself has experienced, in his dispute with the bishop of Worcester, which obliged him to have recourse to a syllogism. He entirely mistakes the use of syllogistic rules, in stating, that it is imagined that men learn thereby to reason more justly. This is far from being their general use; they direct men, not how to reason, but to express the purport of an argument more distinctly; to detect errors in reasoning, and to exhibit in a narrow compass the several propositions which, in a long discourse, may have been so dilated, as to escape the memory or distract the

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the attention. In short and plain arguments, where no contradiction is apprehended, the syllogistic form would undoubtedly be superfluous, tedious, and even ridiculous; but still the syllogism exists in the mind, else the reasoning would not be just; the mind discerns the connexion of the extremes and middle term *simultaneously*; but it can be expressed in words, only successively, and the forms of expression may be more or less explicit.

961. In some cases the syllogistic art teaches how to reason; for after the properties of a subject are known, it teaches to range them in the form most proper to solve the question, as will be shewn hereafter.

962. The syllogistic form not only shews how to express an argument most distinctly, but also in what respect the arguments of an adversary are fallacious: this use is so important, that in many, even amicable controversies, carried on in a loose and diffuse manner, the reduction of arguments to the syllogistic form has been demanded. Thus, in the famous conference of *Beza*, with the Lutheran professor *Jacobi*, at Montbeliard,* *Beza*

* Colloq. Montis pelgartens, 45; and Bayle, *Beza*, English, p. 792.

entreated him to present his arguments in the syllogistic form.

963. This use is in some sort acknowledged by Mr. Locke, but restricted to cases which very seldom occur: his words are, "their (syllogisms) chief and main use is in the schools, where men are allowed, without shame, to deny the agreement of ideas that do manifestly agree." This reflection on the schools, is certainly too general; such a shameless denial never happens, except where it is imagined some sacred mysteries of religion are concerned: these some think contrary to, others above reason, and yet true; "or out of the schools to those who from thence have learned, without shame to deny the connexion of ideas, which even to themselves is visible."*

Can this apply to such men as Beza and Jacobi? can it apply to Mr. Locke himself, who, in his Reply to the Bishop of Worcester, † to refute his lordship's assertion, that the nature of man in Peter, is the common nature of man, &c. says, "whatever is in Peter exists in Peter, but whatever exists in Peter

* Is not this the language of an inquisitor?

† P. 135, 1st edition, 8vo.

"is particular, and it confounds my understanding to make a general particular;" which in effect is the same as saying, *therefore a general or common nature does not exist in Peter*. His reasoning, in the whole of this controversy, would have been infinitely less tedious and perplexed, if he had deigned to adopt the precision of the schools.

964. But, continues Mr. Locke, "to infer "is nothing, but by virtue of one proposition "laid down as true, to draw in another as "true; that is to see, or suppose, such connexion of the two ideas of the inferred "proposition."

This account of the nature of inference is surely incorrect: in all inferences there necessarily are three propositions, one stating the agreement of the middle term with one of the extremes, and another stating its agreement with the other extreme. The second proposition, therefore, is not the inference; this results from the joint consideration of both propositions.

965. To explain himself further, our illustrious author lays down the following proposition: *men shall be punished in another*

world, and thence (says he) let it be inferred, *that men can determine themselves*. Here, indeed, two propositions are laid down, but it cannot be said, that the second is inferred from the first, the connexion not being as yet apparent; he continues, "the question is, "whether the mind has made the inference "justly;" it surely could make none if it proceeded no further. "If it has made it by "finding out the intermediate ideas, and "taking a view of the connexion of them "placed in a due order, it has proceeded rationally." Now the connexion and true order of the intermediate ideas that draw in (as he calls it) the conclusion, he states thus, "Men should be punished—God the punisher "—just punishment—the punished guilty—"could have done otherwise—freedom—self "determination. Now," says he, "I ask "whether the connexion of the extremes, "(that is, betwixt the idea of men's punishment in the other world, and freedom and "self-determination,) be not more clearly "seen in this simple and natural disposition, "than in the perplexed repetitions and jumble "of five or six syllogisms."

966. I frankly own, that the mode of reasoning here exhibited seems to me much less clear, and apparently less connected, than if the substance of it had been presented in the syllogistic form; thus, *men shall be punished in the next life, and God will be the punisher, Now punishments inflicted by God must be just, therefore that punishment must be just. Again, if the punishment be just, the punished must be guilty; but God being the punisher, the punishment must be just, therefore the punished must be guilty.*—3d. *If the punished are guilty, they must have had the power of acting otherwise than they have acted; but that they are guilty has been just shewn, therefore they had the power of acting otherwise.* Lastly, *the power of acting otherwise than one has acted, is what is called freedom; or the power of self-determination; but these men have had the power of acting otherwise, as just seen; therefore they had the power of self-determination.* Here there but are four syllogisms and no jumble; I appeal to every reader, whether the reasoning be not clearer, and its links better connected, than in the view exhibited by our author.

967. 2dly, Our author thinks it an insu-

perable objection to syllogisms, that many, all over the world, reason with great clearness and accuracy, without knowing what a syllogism is. And, in truth, most mankind reason justly on the common incidents of life, without knowing what a syllogism is, just as they speak without knowing the laws of syntax, and speak prose without knowing what prose is; yet, though they know not the word, they practise what it signifies, when from two propositions they infer a third; and this they must do, whenever they reason, in whatever form or garb of words the propositions may be enveloped. Yet, how often do they reason inaccurately, without perceiving that they do so, by not reducing their opinions to the syllogistic form? Thus most nations are persuaded, that they should give implicit credit to the opinions of their ancestors: if you ask them whether they should believe them, whether true or false? many will answer, (though with some hesitation, as I have often observed,) that they believe them because they are true. Now a single syllogism will discover the weakness of this ground of belief; *these are the opinions of our ancestors:*
all

all the opinions of our ancestors are true, therefore these are true.

The second proposition will (as it has often done) embarrass them: to allow it, they plainly perceive, would be to suppose their ancestors infallible, and consequently beings of a superior nature; to deny it, would be to subvert the foundation of their belief. It must reach to all their opinions or to none, since no line of distinction is drawn.

968. But Mr. Locke tells us, "a country
"gentlewoman easily understands it is not
"safe for her to go abroad thinly clad, when
"it blows from the S.W. and threatens to
"rain, without forming a syllogism; and sees
"the probable connexion of that wind with
"rain, and of rain with catching cold, with-
"out the fetters of several syllogisms."

Here we plainly see the source of his mistake; he supposes, that syllogisms formed in the mind, must be incumbered with the same train and succession of words in the mind; as when produced in language; whereas, the contrary is evident;* since the expression of

* See the excellent and profound remarks of Dr. James Gregory, 2 Mem. Edinb. 240 and 241.

the propositions, substantially the same, is nevertheless quite different in different languages and idioms. Thus, in English and Latin, two negatives are equivalent to an affirmative: in French and Greek, they are not, but rather deny more strongly. It appears to me, that things, and the sentiments of men concerning them, are conceived all over the world, in the same uniform manner; the expression alone is varied, by reason of the sundry occasions, which originally gave rise to it, and rendered it intelligible. When propositions contain nothing unusual, the connexion of many of them with each other, is seen all at once, as is acknowledged by Locke himself.* “How, as it were, in an instant, do our minds, with one glance, see all the parts of a demonstration, which may very well be called a long one, if we consider the time it will require to put it into words, and step by step to shew it to another.” It is in this faculty of seeing the connexion of many things at once, that mental capacity and comprehension consists; a faculty whose

* Book ii, chap. iiii. sec. 10.

extent varies in various minds, and in the same mind varies as to the relations it extends to; but of this elsewhere. It is not then contended, that mental syllogisms should contain those repetitions that are necessary, or at least should be briefly suggested, in the vocal, much less those *subsumptive* and illative words, *but, now, therefore*. Nor even, in the vocal expression of reasoning, formal syllogisms need be adduced; unless in disputation, where the points contested must be set forth with the utmost precision, or in resuming the substance of a long discourse, and presenting its purport in the clearest and most compendious point of view. And thus it has been employed by the ablest polemic writers; but as an instrument of reasoning, its mental existence is essentially necessary.

969. Our author however alleges, “ that “ in mathematical demonstrations, the knowledge gained thereby, comes shortest and “ clearest without syllogisms;” yet Leibnitz, assuredly one of the most eminent mathematicians of his age, tells us, that Euclid’s demonstrations, are for the most part arguments, almost perfectly in form; and that when

Euclid

973. It is the latent state in which syllogisms form the foundation of reasoning, that has so far imposed on our great philosopher, as to overlook their existence. It should seem as if he considered syllogisms only in that simple, meagre, formal, unembellished state in which they are exhibited in the schools, and which is as necessary in exact disputation as the simplification of equations in algebra, that the adversary may distinctly see what proposition he may grant, and what he ought to distinguish or deny, and hence the precision required by our law in special pleading, the ignorance of which, in many practitioners, occasioned so much mischief, as to compel the legislature to allow less severe argumentation, but much more tedious and expensive.

974. Nay, our author has carried his dislike to the syllogistic forms so far, that he will not allow them the merit of discovering the weakness of an argument, though he owns he once thought them useful in that respect; but, on a stricter examination, he says he found, "that the coherence of an argument was better shewn by subjecting each link to the immediate view of the mind in its proper place,

“ place, whereby its connexion is best observed, than by syllogisms, which shew the incoherence only to those that are versed in “ *mood* and *figure*.” Whether his manner of shewing this connexion, be clearer than the syllogistic, I leave to the determination of those who may compare both modes of elucidation, No. 965 and 966. But, as to what he adds concerning *mood* and *figure*, I shall only say, that without any knowledge of them; the incoherence of an argument may indeed be felt, though without that or some equivalent knowledge, in what point an argument hitches, cannot be pointed out; yet in important debates, to be able to point out the rule transgressed, if any has been, or to shew that no rule has been transgressed, if the informality of an argument be insisted on, is surely a considerable advantage; thus, many injuries may be felt, without any knowledge of the law or statute transgressed, but to be able to point it out, is highly advantageous and satisfactory.*

975. I

* Of this we have a remarkable and decisive instance in the Bangorian controversy; See Bishop Hoadly's argument

975. I shall here conclude this tedious, and to me highly irksome disquisition. It is with the utmost regret I oppose so high an authority as that of Mr. Locke; but, on this occasion I cannot but think, that his judgment was warped by the just indignation he felt at the trifling, yet solemn wrangling of the schools in his day, and the over nice attention paid to syllogistic forms; this indignant feeling is easily discerned throughout this whole chapter. His objections to the intricacies of mood and figure, I very willingly allow; they may easily be avoided, as all are reducible to the first figure.

The objections of Dr. Campbell, in the first volume of his excellent Treatise on the Philosophy of Rhetorick, p. 164, being for the most part the same as those of Mr. Locke, need not be mentioned; they are sufficiently refuted by his own practice. For though he tells us, p. 164, that “ the method of proving

ment in his answer to Dr. Snape, p. 31; Snape's second Letter, p. 58; and Prat's Reply thereto, p. 41; and the syllogism formed by Lord Camden, to explain the statute of frauds; and an obscure case in Carthew. See the case of *Hindson v Kersey*, 5th George 3d, 1765.

by

" by syllogism, appears, even on a superficial
 " review, both unnatural and prolix," yet, in
 p. 124, he himself, to prove that demonstra-
 tive evidence does not admit a contrariety of
 proofs, forms the following syllogism: " If
 " one demonstration were ever capable of
 " being refuted, it would be by another de-
 " monstration, this being the only evidence
 " adapted to the subject, and the only sort by
 " which the former could be matched. *But*
 " to suppose that contraries are demonstrable,
 " is to suppose that the same proposition is
 " both true and false, which is an evident
 " contradiction, *consequently*, if there should
 " ever be the appearance of demonstration on
 " opposite sides, that on one side must be fal-
 " lacious and sophistical." He may, indeed,
 call this argument an epicherema, if he chuses,
 as each proposition is supported by a proof,
 but it is evidently grounded on a syllogism,
 and if the proofs were disputed, they also
 should be proved by syllogisms. Where, in
 this argument is that *petitio principii*, which he
 says, p. 174, is essential to a regular syllogism?
 If it were, it is extraordinary that the eagle-
 eyed scholastics never discovered this radical
 defect.

P. 181, he says, it is ill adapted to scientific researches, and for that reason never employed by the mathematician. Yet Leibnitz asserts, it is constantly employed by Euclid, as already mentioned, and so also in algebra. But suppose it were not, are there no other sciences but the mathematical? Is the syllogism of Lord Camden, in the case of *Hindson v Kersey*, uninstruative? It runs thus: "No person who would be incompetent to prove a will upon a trial, can be credible to attest it upon the execution; the devisee in this case would be incompetent to prove. *Ergo*, he is not credible to attest." See his Argument, p. 69.

P A R T IV.

OF METHOD.

976. This is the last and not the least important part of logics, as it indicates, first, the general means of investigating truth.

Secondly, how truths, already known, are most easily communicated.

Thirdly,

Thirdly, how to ascertain truth by controversy.

Fourthly, the means requisite to obtain truth from living witnesses.

Fifthly, the rules to be observed for obtaining a true interpretation of written documents.

It is scarce necessary to mention, that all prejudices derived from ambiguous or fallacious sources, or grounded on erroneous principles, should first be laid aside, if not abandoned; the most exact and extensive knowledge of the facts on which the truth of the subject of inquiry depends, should be attained, precipitation avoided, and all biases from interest and partiality vigilantly excluded.

CHAPTER I.

OF THE GENERAL MEANS OF INVESTIGATING AND COMMUNICATING TRUTH.

SECTION I.

OF THE ANALYTIC METHOD.

977. This consists, first, in stating the subject of investigation in the most precise and
M m unambiguous

unambiguous manner, excluding every thing extraneous to it, and, (if necessary,) defining the terms in which it is conceived.

Secondly, in observing, enumerating, and marking its known properties.

Thirdly, in observing the relation of these properties to each other, and to some known standard, or general tests with which they may be examined and compared.

Lastly, in deducing from such comparison, such facts or other truths as may thereby be discerned, demonstrated or rendered probable, and causes from their effects.

978. As we thus proceed from the simplest and most known properties of an object, to the more complex and remote, and thus to the gradual developement of its nature, as far as it may be known, or the solution of a proposed question requires, this method is styled that of *resolution* or *analytic*.

979. It is thus we learn to *read*, beginning with the sounds attached to the letters of the alphabet, thence proceeding to the syllables formed of those letters, and, lastly, to the words formed of those syllables.

980. In the same manner we learn *foreign languages*.

languages. First distinguishing the various parts of speech, as nouns, and their subdistinctions; then the manner in which their relations are designated, whether by terminations or articles; thence proceeding to verbs, noting their various inflections, according to their relation to time, and to the intention of the speaker; then we attend to those parts of speech which suffer no variation; and, lastly, we learn to ascertain the relation of these different parts to each other, according to the syntactic rules peculiar to each language.

981. So in studying *logick* from preliminary observations on the use, signification, and general relations of words to their objects, we proceed to observations on propositions formed therefrom. Their combination with each other in the act of ratiocination, and the evidence, certainty, probability, or doubt, resulting from the combination; we next learn to detect its various abuses, and mark some false principles which have frequently, but erroneously, been admitted; to which we substitute some general principles of general use in speculative reasoning;

and, lastly, we conclude with stating the observations contained in the present chapter.

982. So in analyzing natural bodies, the peculiar province of *chymical science*, we begin by separating, if necessary, every visible foreign particle; we next proceed to examine its bulk or weight by reference to the standard measures or weights of the country, and its specific gravity by its relation to that of an equal bulk of water; then we observe the properties it exhibits, when exposed to heat, whether by distillation, sublimation, fusion, or vitrification; then its relation to various tests, whether acid, alkaline, spirituous, or oleaginous, noting the results of the action of these tests, and the distinct parts separated by them, and the classes of natural bodies to which they are referable. And finally, if possible, recomposing the whole, by the reunion of the parts thus separated.

983. Hence, it is plain, that to attain a knowledge of this science, we must first learn the nature, use, and application of the tests it applies, and the various specific results to be expected from their application to the various known classes of natural bodies.

984. It

984. It is also by this method, that the sciences of numeration, as arithmetic and algebra, must be acquired, gradually proceeding from the simpler to the more compound operations. Geometry also, though taught synthetically, yet is more easily and naturally acquired by the analytic method, as the celebrated Clairaut has shewn, in an excellent treatise thereon. In these sciences, evidence is the proper test of every proposition advanced.

985. In the speculative sciences of metaphysics, ethics, and natural law, the solution of many questions is most naturally obtained, by proceeding according to this method; to illustrate the practice of which, I shall subjoin two examples.

First in *metaphysics*.

986. Suppose the question to be, *whether the mind be a simple substance?* I first state, the meaning I affix to the terms in which it is conceived. *Mind*, denotes the principle or subject of our sensations, ideas, judgments, and other perceptions.

Substance, denotes a being capable of perception.

M m 3

Simple,

Simple, denotes the denial of composition, or a thing whose constitution is an unit in the strictest sense.

Secondly, in examining the properties of mind, I find by consciousness, that it is capable not only of perception, but also of judgment.

Thirdly, attending to the act of judging, I find that to judge, the mind must compare the objects which it connects or disconnects.

Fourthly, I find, that to compare two objects the mind must have them both in its view at the same time.

Whence I argue thus :

To view two objects together, at the same time, they must both co-exist in one and the same single indivisible substance. But, in order to judge, the mind must have the two objects it compares, connects, or disconnects, present to it at one and the same time, therefore, they must both co-exist in a single indivisible substance. The second proposition is proved thus: if the objects compared be not allowed to co-exist in a single substance, then they must be supposed to exist in at least two substances or parts. Now, such a supposition is repugnant

nant to the nature of a comparison, and consequently cannot be admitted.

This second proposition is proved thus: to compare two objects, one existing by the supposition in the part *A*, and the other in the part *B*, they must be both known; but since the mind in this supposition is not a simple substance, but exists in the parts *A* and *B*, the portion of it existing in the part *A*, and to which one of the objects of comparison is present, cannot know what exists in the part *B*, to which the other object is present; otherwise, contrary to the supposition, both objects would exist in one part, therefore it cannot compare them.

This second proposition is thus proved: the parts *A* and *B* are supposed really distinct from each other, therefore, the knowledge possessed by the part *A* is not the knowledge possessed by the part *B*, nor can the part *A* know what passes in the part *B*: therefore, in this supposition no comparison could be instituted, nor consequently any judgment, and yet we are conscious of both, therefore, this supposition is inadmissible, and consequently the mind is a simple substance. See Condillac.

Secondly, in morals.

987. It has been maintained, about the beginning of the last century, and supported by some plausible reasoning, that *private vices were public benefits*.

To examine this opinion, let the terms be first defined.

Vices, denote habitual excesses, detrimental to an individual or to the public, without being the objects of criminal law ; as *drunkenness, prodigality, avarice, libertinism, &c.*

Private, denotes the vices of some individuals, and not of the *majority* of the society, for then the assertion would be glaringly absurd, as it would be tantamount to affirming, *that public vices are public benefits*.

Public, denotes a majority or plurality of persons.

Benefits, denote advantageous upon the whole.

We next proceed to the examination of the properties of the object in question, which, in this case, are the consequences resulting from vitious habits.

First, it is indeed allowed, that they are hurtful to the individual engaged in them;
but,

but, considering each vice in particular, suppose *drunkenness*, it may be said, that some persons are benefitted by it, for instance, the merchant who imports the wine consumed, the shipwright who constructs the vessel that imports it, the various trades employed in the construction, the sailors who navigate the vessel, and the revenue derived from the importation.

Add to these, the gains resulting to the physician and apothecary, called to remedy the distempers occasioned by this vice, to the druggist who supplies the apothecary, to the merchant who imports those drugs, and to the revenue arising from the duties laid on them.

On the other hand, the mischievous consequences attendant on, or resulting from this vice, are, first, the bodily disorders that originate from it; secondly, the broils, quarrels, outrages, and sometimes homicide, even of his nearest relations, committed by the unhappy victim of this vice; thirdly, the ruin it entails on his family, either by the neglect of the business he may be engaged in, or by the rash contracts he may be seduced to enter into,

into, during the period of his intoxication; fourthly, the inability to pay his just debts, and the numberless embarrassments arising thereby, to those who have had the misfortune of having interest depending on his conduct.

Thirdly, we are now to examine how far, on balancing the consequences of this vice, it may be said to be advantageous or injurious to the public.

First, the wine merchant, shipwright, public revenue, &c. are benefitted by the importation of wine, taken in moderation and sobriety; nay, they will be more benefitted, than if it were taken with excess. For, let us suppose this excess to prevail in a large portion of society, the result will be, that from the inattention and neglect arising from its indulgence, the merchant will very generally remain unpaid, discouraged, if not ruined; at best his sale will be diminished by the sickness or death of his customers, and thus the presumed advantages of this vice will gradually cease: the calamities issuing from it to men engaged in different professions, whether military, legal, ecclesiastical, or mercantile,
are

are too obvious to be particularly insisted on, and too numerous to be minutely detailed. The benefits resulting to men of the medical profession, even if real, would be a sufficient proof of the evils it produces; the numerous disorders incident to human nature, and which flesh is heir to, form a source sufficiently copious for the support of a profession founded on their existence, and the number of whose members, must ever be proportioned to that of the evils they are called to remedy.

Many other vices might be mentioned, which are in no degree beneficial to the public, but the considerations here adduced are fully sufficient to enable us to see the falsehood of the tenet here examined.

SECTION II.

OF THE SYNTHETIC METHOD.

988. Though truth is most easily discovered, and some sciences more easily attained by the analytic method, yet other sciences are more readily communicated by the synthetic method, and some problems satisfactorily resolved.

989. The

989. The sciences most properly communicated by this method, are those that proceed from the most general truths, to those that are subordinate to them, dividing them into distinct classes, and so descending to those that are particular, or least general. : Thus the whole collection of truths is gradually unfolded to the learner, and until it is capable of being thus developed, it scarcely merits the denomination of a science.

990. Hence the sciences, to the acquirement of which, this method is best suited, are some branches of natural history, natural philosophy, jurisprudence, ethics, politics, theology, and medicine. Euclid follows this method in his Elements of Geometry.

991. Thus in that branch of natural history which treats of *minerals*, we first divide them into four general classes, earths and stones, which form one class, salts, inflammables, and metallic substances. Then earths are subdivided into their different species; calcareous, barytic, magnesian, argillaceous, &c.; in the same manner the other classes are subdivided, and each kind and species defined.

992. So *jurisprudence* is divided into three
general

general branches, the laws of nature, of nations, and the municipal law of each distinct country; the definition of law in general, and of each of these grand branches being premised.

993. So *medicine*, or the art of healing, is divided into physiology, pathology, hygiene, and therapeutics; each of which admits numerous subdivisions. Nosology, a branch of pathology, is divided by Dr. Cullen into classes, orders, genera, and species.

994. In *natural philosophy*, the general nature of bodies is first stated, then their general properties, as gravitation, elasticity, attraction of cohesion, elective attraction, solidity, liquidity, caloric, laws of motion, &c.; then the peculiar properties of electricity, magnetism, &c.

995. A proposition is said to be proved by the *synthetic* method, when its truth is deduced from truths still more general or better known; as axioms and definitions; this sort of proof is therefore called *a priori*. And thus effects are deduced from their causes. It is thus the existence and unity of the Divine nature has been most ingeniously and accurately proved
by

by Dr. Hamilton, the late Bishop of Offory. And thus the solution of many questions in ethics and jurisprudence has been attained.

996. The explanation I have here given of the analytic and synthetic methods, differs indeed from that given by Dr. Watts, but is agreeable to that assigned by Mr. Duncan,* Le Clerc, Condillac,† Du Marfais,‡ Port Royale,§ and the most approved scholastic writers. Mr. Edgeworth well observes, that the words synthesis and analysis, are frequently misapplied. ||

SECTION III.

OF THE INVESTIGATION OF TRUTH BY CONTROVERSY,
AND THE SUPREME JUDGE OF DISPUTED QUESTIONS.

997. Upon whatever grounds, men by their solitary attention form their opinions, they are so far biassed by them, that they see much more clearly the reasons by which they are supported, than those by which they are

* P. 275.

† Vol. i. p. 132.

‡ Logick, 162.

§ Part IV. chap. iii. p. 465.

|| On Education, 2d Edit. vol. i. p. 178.

or may be opposed ; yet, since the solution of all questions that do not admit of a clear and rigorous demonstration, must be deduced from the joint consideration of the arguments that favour, and of those that oppose any particular decision, it is plain that such arguments should be produced and proposed by those who entertain opposite opinions on the subject, for they alone can expose them with the force and clearness of which they are susceptible.

998. Controversies therefore duly conducted, are excellent means of elucidating any question, and settling a true decision; hence in our courts of justice, much stress is not laid on rules or decrees that passed without debate.

999. The rules to be observed in conducting a controversy in the most advantageous manner, are well laid down by the learned, judicious, and highly impartial Dr. Hey, late Norrisian professor at Cambridge, from the first volume of whose lectures I shall extract them, with such additional observations as I think requisite.

“ First, the terms in which the subject in
debate

“ debate is conceived, should be so clearly explained, as that their precise signification should be expressly agreed on by both parties.

“ Secondly, all expressions of self-sufficiency shall be carefully avoided ; he uses such expressions who calls his own cause the cause of God, and his own interpretation the word of God.

“ Thirdly, whoever uses personal reflexions shall be deemed an enemy to truth ; they prevent even just reasoning from being attended to by common men.

“ Fourthly, let no one accuse his adversary of indirect motives.

“ Arguments are to be answered, whether he who offers them is sincere or not ; to inquire into his motives is then useless ; to ascribe indirect ones to him, is worse than useless ; it is hurtful. Sometimes, however, the case is such, that it seems as if we were not bound to take men in the literal sense, when they profess their motives for writing. These are sometimes to ward off danger, or prevent a legal prosecution ; of this sort is the conclusion of Mr. Hume's *Essay on Miracles*.

“ Fifthly,

“ Fifthly, the consequences of any doctrine
 “ are not to be charged on those who hold
 “ those doctrines, except they expressly avow
 “ them; if from any proposition, absurd pro-
 “ positions follow, it is rightly concluded, that
 “ the original proposition is false, but it can-
 “ not be rightly concluded, that the adver-
 “ saries maintain those absurd propositions;
 “ that is barely a question of fact.

“ Sixthly, it is improper to refer any saying
 “ of an adversary to a party; this is done
 “ when it is said, *this is downright popish su-
 “ perstition, Scotch philosophy, Irish blundering,
 “ rank Tory principle,*” &c.

-1000. These rules have very seldom been
 observed in any controversy; the nearest ap-
 proach to a perfect conformity to them, may
 be seen in the controversial correspondence of
 the late excellent Dr. Priestley and Dr. Price;
 and also in the amicable conference of the
 learned Beza and Professor Jacobi at Mont-
 beliard. But of the grossest violation of all of
 them, innumerable instances may be adduced,
 even in writers in other respects of the greatest
 respectability. See those extracted from Bishop
 Warburton by Dr. Hey, vol. i. p. 467.

1001. Of the Socratic mode of disputation some excellent specimens may be seen at the end of Leibnitz's *Theodicea*, and in Le Clerc's *Logick*, p. 237, &c. and Dr. Berkeley's *Dialogues*.

1002. Conformity with reason, when clearly and distinctly discerned, or, in other words, when *evident*, is undoubtedly the genuine criterion of truth; but when in complicated or obscure subjects, the appearance of such conformity is the result of an intense, continued, and diversified attention, experience shews us, that somnolency, or some unperceived error, may vitiate our conclusions, and thus we are never certain of the rectitude of the process that led to them, until we have repeated it after some interval, or procure it to be repeated by another; the greater the number of persons who agree in the same determination, the greater our assurance of its truth; it is thus, that in physical, and often even in mathematical subjects, certainty is attained. In the investigation of past facts, perplexed by contradictory or variant testimonies, or attended with circumstances apparently fabulous; and also in moral subjects,

1001 from

from the variety and opposition of the numerous considerations which must be weighed; and carefully attended to, it is often difficult to form that decision which is most conformable to the due estimation of probability in the former case, or to the rules of morality in the latter; we must therefore, as in physics, have recourse to the determinations of others, sufficiently qualified to form an opinion on such subjects, and compare them with our own, if we form any, or with each other if we form none: the less assurance we have of the justice of our own, the more reliance we may possibly repose on the opinions of others, but the stronger our confidence in our own, the less we shall feel ourselves disposed to yield to the decisions that oppose them. It cannot be deemed unreasonable, that when conscious of the purity of our motives, and possessed of sufficient grounds, and means to form an opinion, we should prefer that which is directly founded on our own immediate discernment of its probability, to that formed by others; whose probability can only be indirectly seen, or rather inferred, from the supposition that possibly the *data* on which

their opinion is formed, have been more correctly appreciated.

1003. Nor can such judgment argue a blameable presumption ; it is only preferring a stronger to a weaker impression : 1000 eyes in the same position and circumstances, can see no further than two equally well conditioned. We have many instances in which the opinion of one individual was found preferable to that of a multitude, equally capable of forming a correct judgment ; the opinion of Lord Chancellor Finch, in opposition to that of the three principal judges of England, was approved by the House of Lords, and held to be law ever since. *Third cases in chancery, duke of Norfolk's case.*

1004. However, it must be allowed, that in cases where the truth of a decision cannot be rendered indisputably evident, the last, and supreme tribunal, to which men can resort, is the free, unprejudiced, and deliberate judgment of men, possessed of sufficient knowledge, and consequently furnished with the due means of forming a decision uninfluenced by authority, and unbiassed by religious zeal, or any party or individual interest, or other

other depraved motives, in all foregoing ages; for the judgment of one age; particularly of that in which the controversy arose, is rarely sufficient. Such a decision, if it could be had, would undoubtedly impress a conviction little short of a complete demonstration; but though it can never be exactly attained, we may in every age, on many subjects, approximate towards it. Thus, the controversies antiently subsisting relative to idolatry and polytheism, have been so happily terminated and acquiesced in, during ages long preceding ours, as to preclude the necessity of a new discussion. So also the controversy relative to the astronomical systems of Ptolemy, Tycho Brahe, and Copernicus, have long since been satisfactorily composed; so also the controverted systems of Descartes and Newton, and numberless others.

1005. Yet some controversies relative to historical facts, which appeared to have received a satisfactory decision in the last or preceding century, have, since the middle of the last, been again revived, and so successfully, that an opposite decision may now perhaps be deemed better grounded. Among many in-

stances of this sort, I shall mention only one, namely, that which concerns the origin of the Septuagint translation of the Old Testament.

The account given by Aristeas of the manner in which the Septuagint translation was obtained, was with some additional circumstances, admitted without any contradiction from the Christian æra, down to the year 1660, about which time its truth was denied by Dr. Hody, and afterwards by the most learned and sagacious critics, both Catholic and Protestant, as P. Simon, Vandale, Prideaux, Du Pin, Le Clerc, and Fabricius, but since the year 1770, it has been supported by very plausible arguments by Tyschen, Simon de Magistris, Eichorn, and Masch, by whom the objections of the preceding critics have been fairly answered.

CHAPTER II.

OF THE MEANS REQUISITE TO OBTAIN TRUTH FROM LIVING WITNESSES.

1006. These are, first, the exclusion of such as are incompetent, and, secondly, examination and cross examination under the sanction of an oath of such as are competent.

1007. Of the qualifications of witnesses, their credibility, and the results deducible from their testimony, when agreeing with or varying from general experience in similar cases, we have already treated from No. 391, to No. 655, but shall be here somewhat more particular.

1008. A witness is a person fit to be admitted to prove the existence of a fact, which he affirms to have known by the testimony of his senses, or the non-existence of a fact, which, without being perceived by him, cannot be supposed to have existed.

1009. He may also prove the general re-

pute or opinion concerning a fact, which, by its nature is incapable of being proved by the testimony of sense, or need not be so proved.

1010. Thus he may prove the existence of a fact he hath seen, or of a shot he hath heard, or of arsenic which he hath tasted or known by appropriate tests, or the non-existence of a shot, which if it had existed, he must have heard, &c. ; or the identity or similarity of an object or objects with which, or one of which he had been previously acquainted ; or (in my opinion) the existence of any past fact, of which he hath a moral certainty.

1011. Testimony given in a court of justice, is in legal language called *evidence* ; hence, I shall here use it in that sense.

1012. Hearsay evidence is not admitted, except, first, it is itself the object testified, as the hearsay or general repute of a *pedigree* or *prescription*, or custom, things which cannot otherwise be known ; or the declaration of a deceased tenant, that a certain piece of land is parcel of the estate which he occupied ; the state of a family, &c. ; or general facts, as a rebellion, plot, &c. ; or the character of a culprit.

1013. Secondly,

1013. Secondly, of the declaration of a dying man, of the person that murdered him; for it is highly improbable that he would then be guilty of a falsehood; but the declaration of a dying criminal is rejected, as he is infamous.

1014. Thirdly, of the voluntary confession of a criminal; for though a man is not permitted to be a witness for himself, he is the very best witness against himself.

Fourthly, in case of a rape, after a woman has given evidence of it; here relatives are admitted to prove her having told them of it, about the time it happened.

1015. But an offer to pay a sum of money in order to get rid of an action, is not admitted as evidence; for, as Lord Mansfield often said, it ought to be permitted to men to buy their own peace, without prejudice to them, if such offer did not succeed.

1016. The reason on which this rule is grounded, is that no evidence shall be given on oath, of what another man said who was not upon oath.*

* See McNally, 303.

1017. I have said *a person fit to be admitted*, for a person not fit to be admitted to be a witness, cannot in most cases be justly supposed to be a witness, or at least a *credible* witness. Now, a person whose credibility cannot, consistently with just general principles, be even supposed, is what is called an *incompetent* witness.

1018. The impropriety of admitting a person to be a witness, or in other words his incompetency, must arise from one or other of these four causes; first, want of understanding; secondly, an apparent disregard to veracity; thirdly, a violent inducement to depart from it; fourthly, the inconsistency of such testimony, with a superior obligation.

1019. A person, in whom these disqualifications exist in a high degree, is said to be *incompetent* to be a witness; but if they exist only in an inferior and more doubtful degree, they affect only his *credibility*; he may be admitted as a witness in our courts of law, but his credibility is left to the decision of a jury.

1020. I shall here barely sketch out the most rational rules that have occurred, under each

each of these heads, leaving the minute detail of their highly diversified application to the excellent tracts on evidence, both in civil and criminal cases, of Lord Chief Baron Gilbert, edited by Mr. Capel Lofft; and the still later of Mr. Peake; and that on criminal cases only, by Mr. M'Nally, who is eminently distinguished by his profound knowledge of this branch of his profession.

SECTION II.

FIRST DISQUALIFICATION; *want of Understanding.*

1021. As all witnesses are examined in a court of justice upon oath, it is necessary they should be sensible at the period of their examination of the obligation it lays them under, and of the penalties incurred by its infraction.

1022. Consequently, it is necessary, first, that they should be of an age sufficient for the development of their intelligence. This age never exceeds fourteen years, for they then cease to be children, but a sufficient degree

degree of intelligence often takes place at a much inferior age ; and whether it does so, is very properly left to the discretion of the judges, to whom, in all cases, belongs the determination of competency.

1023. Secondly, it is necessary that the understanding should not be disordered either by ideocy, lunacy, or drunkenness, either at the period of attestation, or of examination.

1024. Thirdly, it is necessary that the witness should be able to explain himself, at least by a sworn interpreter, at the period of his examination.

1025. Hence, even dumb persons who can explain themselves only by gestures, are allowed to be competent, if sensible of the obligation of an oath.

1026. Under this head, we may likewise arrange men, (if any such be found,) who disbelieve the existence or providence of the Supreme Being, for they cannot be bound to veracity by the obligation of an oath.

SECTION III.

SECOND, DISQUALIFICATION, *apparent Disregard to Veracity.*

1027. As witnesses are examined solely for the purpose of elucidating the truth of facts by their testimony, and as this can never be supposed attainable with certainty, from the testimony of those who have given signal proofs of their disregard to it, it is evident, that such persons can never be accounted competent witnesses. Hence, persons convicted of perjury, and judgment had thereon, or of forgery, or of coining, or attainted for a false verdict, are incompetent. Other incompetences have been created by statutes, but these not being grounded on natural reason, are here omitted.

SECTION IV.

THIRD DISQUALIFICATION, *a violent Inducement to disregard Veracity.*

1028. The general inducements to depart from truth, in bearing testimony, are, first, a certain

certain loss, danger or detriment, ensuing from its truth, either to the life, liberty, reputation, or property of the attester. But a mere possibility of such loss or detriment, cannot be looked upon as a preponderating bias. Nor is a consequent loss to one's nearest relations or party considered as productive of such a bias.

1029. Secondly, the acquisition of an immediate advantage to one's self, in consequence of the testimony, but the gain of one's nearest relations is not thought sufficient to exclude his testimony.

1030. Hence the general rule is, that no man shall be admitted to bear witness in his own cause.*

1031. Thus

* The justice of this rule appears to me very doubtful. The numerous exceptions from it, both at common law and by statutes, and the discordant opinions of the ablest judges, and their frequent embarrassments concerning its admissibility in many cases, evidently prove it to be so. It should seem, that such testimony should be admitted in all cases, and that its *credibility* only is indefinitely weakened, and of this a jury is the proper judge. Moreover, our courts daily admit the testimony of the nearest relations, and of the most violent bigots to party, though in both cases

1031. Thus a man is not admitted to prove that his name to a note or bond has been forged;* yet Holt, one of the ablest judges that ever sat on a bench, says a man may be a witness to set aside his own bond obtained by duress;† and that a man shall be a witness for himself, where the nature of the thing allows him no other evidence.

1032. But if two men are severally indicted for perjury, with respect to the same fact, one is permitted to be a witness for the other, as the acquittal of the latter will not serve to acquit the witness.

1033. Yet at common law, a man was permitted in some cases to swear that he owed nothing to a plaintiff, when six, eight, or twelve others swore they believed his oath to be true; this was called *wager of law*.

cases the temptations to deflect from the exact line of truth, may be as violent as, at least, that of a moderate direct interest. And in courts of equity, and in affidavits, are not men admitted to bear witness for themselves. Christ, it is true says, if I give testimony of myself, my testimony is not true, John v. 31; yet *true*, signifies only *worthy of belief*, that is, absolutely persuasive. See Grotius on this verse.

* Peake on evidence, 147.

† *Queen v Sewel*, 7 Mod. 119, 120.

1034. So

the time of the trial, and therefore this objection may be removed by a *release* before the trial.

If a servant is beaten by a stranger, and the master brings an action of trespass against the stranger, the servant is admitted to be a witness.

1041. It also often happens, that to refuse a witness, because he is interested, would occasion a greater evil than his admission; for, the evil arising from his admission is *precarious*, as his credit is still open to the consideration of a jury; but his exclusion would often operate a *certain* evil, as better proof cannot, from the circumstances of such a case, be expected.

1042. So, a person robbed, is allowed to witness that fact, in order to charge the hundred under the statute of Winton, (even at common law;) for otherwise the benefit of the statute might be excluded, as no other person might be present.

1043. So, a person who bribed another at an election, is a competent witness to prove the fact, though he thereby frees himself from the penalty.

1044. In

1044. In public prosecutions for injuries, the party injured, may in most cases be a witness, for no private advantage accrues to him, either directly or consequentially.

SECTION V.

FOURTH DISQUALIFICATION, *the Opposition of a superior Obligation.*

1045. It is the duty of all the members of a society, to promote the execution of justice by their testimony, when necessary, for its attainment; yet there are duties of a still higher nature, whose existence precedes even that of all conventional societies, and cannot be superseded by them. Such is that resulting from the conjugal union, (and, in my opinion, also that arising from parental relation,) which may oppose that of testimony or against the party that stands in that relation to the other, where a personal injury does not intervene.

1046. An artificial connexion is also formed in all civilized societies, between persons pro-

professionally employed in conducting suits, and those who for this purpose confide in them, as barristers, attornies, and solicitors. To preserve this confidence inviolate, such persons are excused from giving testimony as to facts thus disclosed to them.

SECTION VI.

OF TESTIFIABLE OBJECTS.

1047. Testifiable objects are those which are perceived by the organs of sense, or which if they existed, must have been so perceived, or otherwise certainly known.*

Or, secondly, the general repute of objects which are incapable of being perceived by sense.

Or, thirdly, the identity of an object viewed at different periods of time.

Or, fourthly, the identity of causation.

Of the second head I have already treated, No. 1012, 1016. Hence, I shall here consider only the two last.

* This last, Gilbert calls *deductive* certainty. Lofft's edit. p. 6.

Of the Identity of an object.

1048 That the man I have seen this day is the same man I have seen yesterday, or last year, or two more years ago, I infer with that degree of confidence which is called certainty, from the undescribable characteristic similitude, even though in some respects degraded or imperfect, betwixt his features, size, voice, &c. actually observed, and those which I sufficiently recollect to have formerly observed. Such a similitude being very rarely found, between two individuals of the human species, the knowledge founded on such recollection, is called an acquaintance. That it is sometimes liable to mistakes, see the case of Martin Guerre, in *Causes celebres*, vol. i. c. 10.

Of the Identity of Causation.

1049 The belief of this is founded on the same principle as in the last case, but somewhat weakened; for, it being well known, that certain effects most commonly bear characteristic marks of the individual cause from whence they proceed, it comes to pass, that a striking similitude betwixt an object presented,

to a witness, and other objects already well known to him, to proceed from a given cause, must impress on his mind a firm persuasion or belief, that the object now presented to him, proceeds from the same cause; or, in other words, the identity of the cause of certain effects, may with confidence be collected from a view of the characteristic marks antecedently known to be peculiar to effects proceeding from that cause.

1050. Yet, as it is also known, that certain effects have frequently been so well counterfeited, as to be difficultly distinguishable from those that are the genuine effects of a given cause, the persuasion of their real origination from that cause, is not altogether as strong as that of the identity of an individual, seen at different periods of time.

1051. Of the objects whose similitude and peculiarity of manner is capable of producing this persuasion, I know but two, namely, first, that of written characters, (more particularly if the writing be of considerable length,) with other writings recollected by the beholder, and known to have been indited by a given person, either by having seen him write, or
from

from consequences necessarily connected with the supposition that they were penned by him, and by no other.

1052. And, secondly, that of *style*, whether in prose or verse, painting, engraving, music, or architecture, in distinguishing which connoisseurs are rarely deceived. It is by such general similarity betwixt writings, &c. of the same age or author, that they are distinguished from those of another age or author; of this species of criticism, Montfaucon and Malone have given remarkable specimens.

1053. With respect to the ascription of a writing to a particular person, two questions have arisen in our law; the first relates to the time, and consequently the properest method of tracing it to him.

And, secondly, whether, when referred and satisfactorily brought home to him, it may be alleged as a proof or as a presumption?

1054. And, first, with respect to the investigation, two methods have been proposed; the one, grounded on a similitude, discovered by a comparison, instituted by persons not previously acquainted with his hand, betwixt the writing in question, and other writings

certainly known to have been penned by a certain person. This method is now deservedly rejected; for, first, a belief grounded on the result of such comparison, is circuitous, for the writing it is compared with must first be proved by other witnesses; and, secondly, it is much more frail than that founded on a previous knowledge of his hand,—the persuasion that originates therefrom, arises from a more settled and firmer association; now, in every species of evidence, the strongest of that species is very properly required.

1055. The second, now generally adopted, is the assurance of a sworn witness, that he is acquainted with the hand, and thence believes the writing produced, to be that of a particular person; but he must explain the reasons on which he grounds his belief; for instance, because he has frequently seen him write, or avow his writing, either expressly or virtually; or has corresponded with him; for it is plain he would not direct an answer to a person, but on the belief that the letter he received was from that person; and this belief may be confirmed by mutual replies, and the frequency of the correspondence: this evidence

is immediate, being founded on instantaneous recollection. It is true that the writing of any man may be forged; but forgeries are rare, and consequently improbable; they should therefore be proved, or at least be strongly inferable from circumstances.

1056. In critical inquiries the similitude or discrepance discovered by a comparison of hands, and other peculiarities, is justly admitted, being the best evidence that can be had in judging of ancient manuscripts.

1057. In answer to the second question, I am disposed to think, that the mere *belief* of a witness, however well grounded, can in no case be looked on as a full proof, independently of other circumstances connected with it; but, with them, it may be a corroborating proof; for *belief* can never be equal to *knowledge*, which is grounded on the immediate testimony of sense; as when a person has seen another penning the writing in question: this then being the best evidence, an inferior evidences can only be looked upon as a *violent presumption*, which, in civil cases, being contradicted, is equivalent to a full proof; but

but not in *criminal* cases, where a decision can never be re-examined or revoked, except privacy be a circumstance almost necessarily connected with the crime; or, that other circumstances naturally concomitant with, or consequent to it, or leading to it, also concur, and clearly enforce the belief of it; unless these also be satisfactorily explained.

SECTION VII.

OF CROSS EXAMINATION.

1058. To cross examine a witness, is to scrutinize his credibility, or even his competency, after his testimony has been given, if, by some mistake, his competency had been at first overlooked, or its defect not known.

1059. Now, his credibility may be either impaired or destroyed; first, by his general repute and character among his neighbours; or, secondly, by the inconsistency of the facts alleged by him, or of the different branches of his testimony; or, thirdly, by the inconsistency of his testimony with that of other witnesses,

witnesses, either more, or at least equally credible; or more numerous and equally credible; or, fourthly, by an intemperate zeal for his sect or party, or even his laudable partiality for his near relatives; or, fifthly, by apparent aversion, hatred, or malevolence, to the party against whom he is produced; or, sixthly, by the connexion of his testimony with his interest, or that of his relatives, or party; or, seventhly, his acceptance of a reward for his testimony; or, eighthly, his previous declarations of his disbelief of a God, or future rewards or punishments.

1060. In general, we may remark, that a witness should not be cross examined to facts, which do not relate to that or those of which he has given testimony.

SECTION VIII.

OF THE DISCREDIT* ARISING FROM DISREPUTATION.

1061. The evidence to destroy the credit of a witness, must be that of persons who

* Or rather *discredibility*, a word wanting in our language, as *incredibility* relates to things, not persons.

have

have known his *general character*, and take upon themselves to swear, from such character, that they would not believe him upon his oath: but they are not at liberty to charge him with any particular transaction, as he may not come prepared to explain it.

1062. Yet it is said, that the party interested to support his character, may call upon those who disparage it, to state the grounds on which their opinion is founded, which seems to me inconsistent; for *reputation* is the ground on which they refuse him credit, and not any particular which he is not prepared to explain or justify.

1063. But declarations made by him on the same subject, contrary to what he swears on the trial, may be given in evidence, to impeach his credit.

1064. If a witness is called, and another is produced on the opposite side, to impeach his credit, the credit of the first is lessened, in proportion to the credibility of the second.

1065. If a witness is produced; and another is offered to destroy his credit, a third witness may be called to support it: the joint credibility

lity of the first and third witness is inverfely, as the credibility of the fecond.

1066. The party who produces a witness, is not allowed to impeach his credit by *general* evidence ; for, if that were permitted, he might destroy his credit, if his testimony were unfavourable, and make him out a good witness if his testimony were favourable, having the means of destroying his credit in his breast.

1067. But if a witness should allege a fact, unfavourable to the party that produces him, that party may call others to contradict him, as to that particular fact ; for fuch facts are evidence in the cause, and the other witnesses are not called, in order directly to discredit the witness, but the impeachment of his credit, as to fuch facts is merely incidental and consequential.

SECTION IX.

OF QUESTIONS WHICH A WITNESS IS REQUIRED TO
ANSWER UPON A CROSS EXAMINATION.

1068. It is useless to ask a witness whether he believes the existence of God ; for if he does not, he may swear he does.

1069. In general, he is obliged to answer, according to his knowledge or memory, any question which relates to his testimony antecedently given, or the points in issue, or to his own interest therein, or to the motives by which he is actuated ; for, his answers to these questions tend to elucidate the truth of the facts on which the jury are to decide.

1070. But no question should be put to him, which he is not obliged to answer ; consequently he should not be asked any, to answer which with truth, would be to accuse himself of a crime, or expose him to some punishment ; nor, in my opinion, should he answer such questions, as, if truly answered, might involve him in disgrace, and lessen his estimation.

estimation. For to oblige him to answer such questions, would in fact be putting him to the torture, betwixt the fear of God on the one hand, and the stings of shame on the other. Self-defence is a law of nature, and no law can bind a man to be his own accuser. The arguments for a contrary practice are such, as may be alleged for torture; the only difference is, that corporeal torture may make a man avow a crime which he has not committed, and mental torture may make him deny that which he hath committed.

1071. Nor, in my opinion, should a man be compelled to swear to his belief of any fact not grounded on the direct consequences of his knowledge, or acquaintance with the object in question; but, if he voluntarily avows his belief, he ought to assign, on what grounds he forms it; for these may be very slight; and, even if solid, they rather serve to corroborate evidence already given, than to form a distinct independent proof. For, it is upon the *knowledge* of the witness, his assurance of a familiar acquaintance with the object, and not upon his belief, that a jury are to form their verdict. The senses of the witness
are

medicinally, or chirurgically, by cauteries, or amputation of a limb, &c. The injustice is still greater in a state of civil society. Because as men, by the social compact, whether express or implied, are obliged to protect and support the sovereign authority of the state, the sovereign is reciprocally obliged to exempt them from vexation in every case, in which it is possible for him so to do, unless there be a sufficient cause to expose them thereto.

Hence, in every case, the sufficiency of the cause is the only reason that can be alleged in excuse of the infliction of pain where the guilt of the person on whom it is inflicted, is uncertain. But the expectation of obtaining truth by a mode of proceeding, in which the pain is certain, and the attainment of truth not merely uncertain, but even improbable, cannot be deemed a sufficient cause for having recourse to it. Now, such is the pretended proof of indication obtained by torture, as appears by the testimony of the most experienced judges in the unhappy countries, where pretended laws have invested it with the abused name of justice. Ulpian de Quest.
tionibus,

tionibus, leg. 1, says, " Res est fragilis et periculosa, et quæ veritatem fallit, nam *plerique* patientia, sive duritia tormentorum, ita et tormenta contemnunt, ut exprimi eis veritas nullo modo possit; alii tanta sunt impatientia ut quidvis mentiri quam pati tormenta mallent." And the benevolent Lewis XVI, in his ordinance of the year 1780, whereby he abolished what was called the preparatory torture; recites, that having consulted the best informed magistrates, they related to him, that at a meeting of the most experienced judges in the year 1670, they agreed that torture was useless, and that truth had rarely been extorted by its means. The torture applied to guilty criminals, called the previous torture, to discover accomplices, was by far the most dangerous to the community, as these criminals, to obtain a respite from their torments, and to be revenged of their torturers, frequently accused their nearest relatives, or other persons entirely innocent, who yet were arrested and imprisoned, and sometimes even tortured in consequence of such accusation.

CHAPTER III.

OF INTERPRETATION.

1074. To interpret a written document, is to discover and make known its true meaning; a task, which frequently requires much sagacity and attention, not only when tracts in a foreign language are to be translated into our own, or an explanation of ancient writings even in our own, is attempted, but more especially, when important documents of modern times, and in our own language, on which the regulation or intercourse of society depend, require a clear exposition, such as statutes, deeds, devises, agreements, &c. Leaving however, to critics and annotators, the detail of the principles and numerous circumstances necessary to be attended to, in developing the true meaning of ancient writings, and particularly of the sacred; and to lawyers, an account of the grounds on which they found the interpretation of legal documents and instruments; I shall barely mention

tion the principal maxims and rules, in conformity to which, a just interpretation must be established in every case in which they can be applied; availing myself, in particular, of those which have been laid down and approved of by our courts of justice during a series of ages.

1075. In forming an interpretation, our attention must not be confined to words, but must likewise be extended to entire sentences, clauses, and phrases;* and the resulting sense of all the parts when compared with each other.

1076. The principal maxims to be attended to, in explaining all writings, are, first, that they should be so interpreted, as to exhibit, if possible, a consistent sense; that is, so that one part should not contradict another, nor be unintelligible in itself, nor, upon the whole, present a sense inconsistent with the rules of logic, the nature and circumstances of the

* A *sentence* is an assemblage of words so arranged, as to present a complete sense.

A *clause* is a distinct subdivision of a paragraph, and may consist of one or more sentences.

A *phrase* is an incomplete part of a sentence.

subject and facts known to the author, or opinions held by him, or to evident metaphysical or moral truths.

1077. The second is, that they should be expounded according to the intent of the author, either expressly elsewhere manifested, or if not, at least naturally suggested, or necessarily inferable from external circumstances. See Grot. in Matthew, chap. i. v. 16.

In conformity to the first maxim, the following rules have been laid down.

1078. First, where the rules of grammar are not exactly observed, but the sense is intelligible, as in the *lingua Franca*, the document is not to be rejected for *mala grammatica non vitiat chartam*.*

1079. Secondly, where a phrase or sentence is grammatically just, but the sense absurd or unintelligible, we cannot reject some words to make sense of the remaining, but must take them as they are; for there is nothing so absurd or nonsensical, but by rejecting or omitting may be made sense.† But, nothing is

* Wingate's Maxims, 18.

† 1 Salk, 324.

more frequent in all languages, than to *supply* some words when the sense evidently requires it.

1080. Third, when a phrase is nonsensical, by its repugnancy to something that precedes it, the preceding matter being rational, shall not be rendered void by the repugnancy that follows it.*

1081. Fourth, relative words should be referred to the next antecedent, where the matter itself does not hinder,† as it frequently does. /

1082. Fifth, the surest method of explaining any writing, consists in taking the collective sense of the whole; construing one part by another part, the doubtful and obscure by the plain and clear.‡

1083. Sixth, and in general, the rules of logic relative to *universal*, and indefinite propositions, and their *opposition*, *equivallency*, *complexity*, &c. are to be observed. Some of them, indeed, are expressly laid down by our legal writers, as that *indefinite propositions are*

* 1 Salk, 324. † Wingate, 15. See Hardr. 77.

‡ C. L. 387, 2 Inst. 31 Plowd. 365, 11 Mod. 61.

equivalent to universal in conjunctivis oportet utramque, in disjunctivis utramvis esse veram.†*

Quod convenit generi convenit speciei sed non vice versa.

1084. Hence, first, the reference of words is often inverted, in order to adapt them to the sense of the parties, when, from other circumstances in the document itself, the intent can be discovered.‡

1085. Hence, secondly, the rules even of grammar and logick, are overlooked when the intention of the parties is evident, and opposes compliance with them. Thus, though it is a rule that *quoties in verbis nulla ambiguitas, ibi nulla expositio contra verba expressa fienda est*;§ yet, where the intent is manifest, it is held, that words shall be understood according to the intent of the parties,|| and it is the office of judges to expound words according to the intent of the common people, and not according to their definition,¶ where their transactions among each other

* Plowd. 23; 2 Roll, 57; 2 Bulstr. 178.

† Wingate, 13.

‡ C. L. 170. Plowd. 134.

§ C. L. 147, Wingate, 24. || 2 Lord Raym. 805.

¶ 6 Rep. 54^b.

are concerned,* and the intention is evident.

1086. Hence, thirdly, *mala gramatica non vitiat chartam*, as already observed.

1087. Hence, fourthly, *conjunctives* may in some cases be taken as *disjunctives*. Grot. in Matthew, chap. v. v. 19, p. 43, as *and* for *or*,† and *disjunctives* for *conjunctives*, as *or* for *and*.‡

1088. Hence, fifthly, in some languages the *past tense* is construed to denote, in particular cases, the present or future tense, Glafs. 417, according to the exigency of the case.

1089. From all which we may conclude, that to form a rational interpretation, regard should be had to both these rules. If the expressions be dubious, the sense must be derived from the intent, and if the intent be dubious, it must be derived from the express words. If both be dubious, no rational interpretation, can be formed; but if both be

* 6 Rep. 66.

† Plowd. 289, 6 Vin. 432, 2 Vin. 263, in note. Brownl. 72, 1 Vesey, 15.

‡ C. L. 99^b, 6 Vin. 432.

clear,

clear, but adverse to each other, the intent shall prevail.

1090. In ancient writing, where the sense is not marked by punctuation, the above maxims must be diligently attended to. Michaelis remarks, that the most ancient manuscripts of the new Testament have no points, and that in the modern manuscripts that have them, they were not copied from ancient documents, but were added by the transcribers of their own authority. Vol. ii. Part I. chap. xxiii. sec. 2. It is doubtful whether the spiritus *asper* or *lenis* were used by the apostles. Ibid. sec. 7. Nor are accents found in the copies antecedent to the eighth century. Ibid. sec. 8. The division of chapters into verses was made by Robert Stephens in 1551. Ibid. sec. 11.

1091. But to be more particular, we must observe, that words are susceptible of different significations; for they may be understood either *Literally*, or *Figuratively*, or *Equitably*, and in all cases, the proper sense of a word or phrase, whether literal, figurative, or equitable, is that which the context and general intent of the writer manifestly demand. Thus the
word

word *man* denotes the human species, a male of that species, a full grown male, a piece of wood on a chess board ; yet we never mistake the meaning, being directed thereto, by what gave occasion for its being employed.

SECTION II.

OF THE LITERAL SENSE.

1092. The literal sense of a word is that which it naturally presents in common acceptation, when singly considered, it being the primitive and original sense ; or it is that afforded by its definition ; but proper names and many others are unsusceptible of definition ; the literal sense may be clear, or ambiguous, or obscure.

1093. Where the literal sense of words is clear, and consistent with the context, that is the general series of the discourse that precedes and follows, and also with the general intent and meaning of the writer, elsewhere expressed, it must be deemed to be that of the writer. And hence the maxim of lawyers :

Quoties

*Quoties in verbis nulla ambiguitas ibi nulla expositio contra verba expressa facienda est.**

1094. But where the literal sense is *incon-*
sistent with the nature of things, or even highly
improbable, yet agreeable to appearances,
received opinions, and modes of expression in
general use, it is not necessary that it should
be deemed the *real sense* of the writer, unless
it evidently appears to have been so under-
stood by him ; and consequently these *modes* of
expression may be taken in a sense not strictly
literal, but in a sense *equivalent* to the literal.
Thus Astronomers and Philosophers all over
Europe, though firmly persuaded of the im-
mobility of the sun, use the same language as
those who believe it to turn round the earth,
and talk of *sun-rise* and *sun-set*, &c. as others
do, the appearances being exactly the same,
whatever system is held concerning their
cause. So we call the first day of the week
Sunday, that is the Sun's day, and the second
Monday, or Moon's day, &c. ; though no one
at present believes days to be dedicated to, or
under the influence of planets or heathen gods.

* C. L. 147, Wingate 15.

So Philosophers, in conformity to common language, ascribe heat to fire, and colours and tastes to the objects that excite or are conjoined with those sensations, though they well know that sensations exist only in the mind. So no physician at present, attributes a certain nervous disorder to St. Vitus, though in conformity to an anciently received opinion, they still call it *St. Vitus's dance*. In all these cases though the strict literal signification is rejected, a sense equivalent to its real import is retained.*

1095. If the literal sense of words or phrases is inconsistent with the nature of things,† the design of the writer, received opinions, or common language, it cannot be taken as the real sense of the words, though it perhaps may be used *figuratively*, as will presently be seen; unless the writer be supposed to mistake, either through ignorance or misrepresentation. But if it be inconsistent with the thread of the discourse, and the

* See Edgw. on Education, 2d edit. vol. i. 298, 299.

† By the nature of things, I mean, known truths, whether philosophical, historical, geographical, or chronological.

words cannot be understood, even figuratively, there such words are evidently inserted by a mistake, whether of the author, or his copyist, or of the printer, or an interpolation.

1096. There are many words, in all languages, whose literal sense is ambiguous, either because they are capable of a double sense, or of a double reference, each inconsistent with the other. In the Greek and Latin languages, many verbs may be taken either actively or passively. The same prepositions are made to express very different relations; and in all countries, different individuals are often denoted by the same name.

To confine myself to a few instances in our language; *oversee* signifies either to *superintend* or to *neglect*; the first signification it has in the *active* voice, the second in the *passive*. *Overlook* signifies also to *revise* or to *neglect*; many other examples might be adduced.

The particle *of* sometimes denotes the relation betwixt two objects, but leaves it doubtful which is the *subject*, and which the *term* of the relation, when each is capable of being either the one or the other. Thus, the *love of God* denotes indifferently, either the
love

love which we bear to God, or that which God bears to us. So the particle *for*, among many other significations, may denote the cause or motive, or disregard to a cause or motive, as when it signifies *notwithstanding*. See Johnson's Dictionary, and Horne Tooke. And the same variety of significations may be found in most prepositions. So where, in the Guardian, No. 80, it is said, "your character affures me that the clergy have not the *least right to your protection*;" the words *not the least right*, abstractedly considered, may signify, either that they have *no right whatsoever*, not even the smallest, or, that their right is *not the smallest* among the different rights that claim protection. Thus in construction, the antecedent to the relative *who*, or *that*, &c., is often ambiguous. So "Solomon the son of David, *who* built the temple of Jerusalem, was the richest monarch that ever reigned over the people of God." And "Solomon the son of David, *who* was persecuted by Saul, was the richest monarch, &c." In these two sentences the word *who* is similarly situated, yet in the former, it relates to the person first mentioned, in the latter, to
the

the second ; but this relation to the one or to the other, it would be impossible for any reader to discover, as Dr. Campbell well remarks, who had not some previous knowledge of the history of those kings. See his philosophy of Rhetoric, vol. ii. p. 39 ; and Sir Sidney Smith's Answer to Pichegru ; 3 Edgw. on Education, p. 249.

1097. From all which it follows, that a just interpretation cannot be founded on the mere letter, but on the letter taken in connexion with the intent, purport, and design of the writer, explicitly and unambiguously laid down in other parts of the document, or otherwise clearly proved, and consistently in many cases with extrinsic circumstances.

1098. To inspect this important subject more minutely, we must take into consideration the different concomitant circumstances in which the literal sense may be supposed ambiguous.

1099. First, it may be plainly ambiguous, and each meaning equally probable. In this case, our law decides, that it shall refer or be applied to the most considerable and worthiest of the objects comprised within its
meaning

meaning. So if a grant be made to I. S. and both father and son are so called, the law understands that the father only is meant.* So if money be payable on St. Michael's day, Michael the archangel, and not Michael de la Tomba shall be intended.† *A digniori sit denominatio.*‡

1100. Secondly, it may be consistent with law or probability, when one way interpreted, and inconsistent when otherwise interpreted: in such case the genuine meaning cannot be justly doubted.§ It is highly *improbable* that a writer should use a word, phrase, or sentence, in a sense inconsistent with what he has already advanced, and yet this sometimes happens. But it is *impossible* that he should use a word that has no connexion or coherence with what precedes and follows, if we suppose him in his senses.

1101. Thirdly, if both senses of an ambiguous expression, be consistent with law, or the nature of things, then that which can be proved to be most conformable to the inten-

* 6 Rep. 20, Salk. 7, Bridgm. 15. † 2 Inst. 485.

‡ Wingate, 265.

§ C. L. 42^b.

tion of the writer, must be deemed to be the genuine sense.* So the word *creature* is equivocal in Rom. viii. 19; or, it may denote men or insensible beings: Grotius takes it in the last sense, but Locke, more justly, in the first sense.

1102. Or, fourthly, one sense of the ambiguous word or phrase, &c. may be agreeable to the plain or probable purport, design, or intent of the writer, and the other inconsistent or less agreeable thereto: in this case also, the interpretation to which the preference should be given, is obvious.

1103. And here we must observe, that words may have different senses in different ages, and this the law will notice.† But it is plain, the writer must mean that sense in which the word was taken in his age, unless the contrary appears. For, as a great judge well observes, the meaning of words in any law, is to be known either by their use and signification before the law was made, or from some law or institution declarative thereof.‡

* 2 P. Wms. 136, Powel on Devises, 494, 495.

† 3 Mod. 28.

‡ Vaugh. 305.

1104. The probable sense of ambiguous words in laws and charters, is also said to be frequently explained by long usage.* With regard to laws, this method may be just, as they are explained by those who are appointed to explain them; but with regard to charters, it may be fallacious, for the intent of those that framed them, is not necessarily that of those for whom they were framed.

1105. It is also laid down as a maxim in law, that words in a grant are taken most strongly against the grantor. This is just, wherever there is any palpable ambiguity, for such words excite a hope, which it would be unjust to excite, and disappoint; but where the ambiguity is not obvious, either to the grantor or grantee, the intention is wanting in the former, and no disappointment can arise in the mind of the latter, and therefore such construction appears unjust. See Paley.

1106. Fifthly, if the sense of a clause be obscure, by reason of an erroneous description, whether of a person, or of a thing, it may be

* Vaugh. 169, Peake on Evidence, 120.

elucidated by extrinsic circumstances; for, if the intent can be ascertained, the clause must be interpreted according to it.*

1107. Sixthly, if a word is capable of being understood either *generically* or *specifically*, it should rather be taken generically, unless there is something that implies rather the specific, than the generic sense. Thus the word *funis*, denoting equally either *ropes* in general, or cables, in the fourteenth ode of the first book of Horace, denotes *ropes*, according to the ablest interpreters, and not cables, though Bentley thought otherwise. See Dacier and Sanadon's notes.

SECTION III.

OF THE FIGURATIVE SENSE, OR TROPES.

1108. Words taken in a sense which they do not literally denote, but barely suggest to the mind, are called *tropes*, (from the Greek *τροπή* ver^{to},) as their literal sense is as it were

* 11 Rep. 21^a. Powel on Devises, 499.

converted

converted into another, different indeed, but grounded on a relation which the literal sense bears to some other object. And as this relation, or the object suggested by it, is thus, as it were, sketched out by this trope, it is called a *figure*, and the sense or meaning, thus suggested, is called the *figurative sense*.

1109. Many have indeed distinguished tropes from figures; but, as Dr. Johnson observes, they are frequently (and justly) confounded by the most accurate writers.*

1110. Figurative language is employed either through necessity, as seen No. 21; or, in order to excite strong emotions, or enlarged conceptions of things. The necessity arose either from a scarcity of words, as in the earliest and least cultivated languages, or from a real impossibility of finding suitable expressions in the literal sense. Thus, words literally denoting objects of sense, are employed to denote mental operations, emotions, perceptions, or conduct, which are not objects of sense, but nevertheless bear some relation to such objects. So we say, a *hard* or *soft hearted*

* Diction. *Figure*,

man, a *clear* head, a *rough* or *smooth* behaviour, *inflamed* by anger, *warmed* by love, *swelled* with pride, *melted* into grief; &c. And these, Dr Blair remarks, are almost the only significant words we have for such notions.* Thus the word *voice*, originally invented to signify the articulate sound formed by the organs of the mouth, is employed to signify the intentions and ideas of men to each other; thus, to *give our voice for any thing*, signifies to give our assent or sentiment in favour of it. Nay, it was transferred to signify any intimation of our will or judgment, though given without the interposition of voice in its literal sense, or any sound uttered at all; thus we say, *listening to the voice of conscience*, the *voice of nature*, the *voice of God*. And this not so much from barrenness of language, as from an allusion we chuse to make to *voice* in its primary sense, in order to convey our idea with more force.† So, human passions are often ascribed to the Supreme Being, though it is impossible they should be applied in the gross literal sense, as they involve

* I Blair's Lectures, 152.

† Ibid. 356.

imperfections incompatible with the Divine nature.

1111. In interpreting many important documents, doubts frequently occur, whether certain words or phrases should be understood literally or figuratively. Before we enter on an examination of this subject, it is proper that we should notice the relations, on which the most usual figurative expressions are grounded. These relations are principally the four following: *Similitude*, (to which class allegories, parables, types, symbols, and personifications belong.)

Secondly, *exaggerated or extenuated similitude*, called hyperbole.

Thirdly, *the relation of opposition*, as in irony.

Fourthly, *the relation of connexion*, as in metonymy.

*Of Metaphors.**

1112. A *metaphor* is a word, used to express a similitude which is discerned, betwixt the thing signified, taken in its literal sense, or

* From *Meta* trans and *phero* fero.

some of its properties, and some other object of which it is predicated. It therefore implies, a mental or tacit comparison of both objects.

Thus a sovereign is called the *head* of the state, because, as the head governs the body and is superior to it, so the sovereign governs, and is superior to his subjects.

So the Scriptures mention the *eyes, ears, hands, arms, words, and mouth* of God, as he possesses powers in some measure analogous to the functions of those organs or members. So human passions are, in popular language, attributed to God, as *anger, hatred, revenge, repentance*, and even *experimental knowledge*, because he produces effects in some respects similar to those that are derived from such passions.

All the epithets mentioned No. 1110, are evidently metaphorical. It is needless to mention any further instances.

*Allegory.**

1113. *Allegory* is a discourse, sentence, or narration, entirely metaphorical; the inten-

* From ἄλλο aliud, and Ἀγωγή narrō.

sion being, that it shall not be understood literally, yet alluding to that sense, and grounded on a similitude with it; as when it is said, that wealth is the daughter of industry, and the parent of authority, daughter and parent are evidently metaphors, and the sentence is an allegory.

A *parable* is a narration in which a fictitious incident is related as real; the personages introduced are such as might really exist and act as related.

1114. An *apologue* is also a fabulous narration, intended for moral or political purposes; but in which, the actors are incapable of language, or even of perception; as *Æsop's fables*, and the celebrated apologue of Menenius Agrippa.

1115. *Type*, (a copy, image, or resemblance) are words, actions, or things, which point out other actions or things, quite different, but which have some resemblance to the former, these last are called *prototypes* or *antitypes*.

1116. A *symbol* is some corporeal thing, used to represent or denote something that hath no corporeal existence. Thus, crowns, scepters,

only the most considerable instances of these substitutions.

First, as *causes and effects* are connected with each other, the *cause* or *instrument* is often put for the *effect*. Thus a legible *band*, means a legible *writing*, and tongue or lip for *language*; or an *effect* for a *cause*, as in the phrase, he *earned his bread by the sweat of his brow*, that is by *labour*, of which sweat is the effect. So the *author or inventor* of any thing, being the *cause* thereof, is substituted for the work or thing invented. Thus in the gospel, it is said, *they have Moses and the prophets*, instead of the writings of Moses and the prophets. So the words *Ceres* and *Bacchus*, are used for bread and wine, of which they (distinctively taken,) were thought to have introduced the use. And so *Mars* denoted war, *Vulcan* fire, *Pallas* oil, &c.

Secondly, when a passion or desire is put for the object of that passion or desire. Thus, ad Coloss. 5, *an account of the HOPE reserved for you in heaven*, meaning the *object* of your hope, which is reserved, &c.

Thirdly, so a *part of any thing* is put for the *whole*, and the whole for the part, they being connected

connected with each other. Thus, in Latin *puppis*, and in English *sail* is put for a ship. So we say, ten sail of the line, for ten ships of the line.

We say also, a *person* was buried, though we believe and mean, that his *body* only was buried. And also, that such a person is in the other world, or in heaven, though we believe his soul only to be there. So a general is put for his army, of which he is the principal part, as *Hanibal defeated the Romans*.

Fourthly, the *container* is often substituted for the thing contained in it. So we say, *he loves his bottle*, instead of wine contained in it. And Virgil says, *ille impiger hausit spumantem pateram, et toto se proluit auro*. Where we see a double metonymy, namely, the present, and that of *gold* taken for the cup, of which it was the material cause. So the *seat or residence* is put for the persons therein residing, as *heaven* for God, when we say, may heaven defend us. So a country or city, &c. may be taken for the inhabitants, as *France declared war*, &c. The thing *contained*, is also sometimes substituted for the *container*. So Virgil says, *vina coronant* for *pateras*.

Fifthly,

Fifthly, the sign for the thing signified. So the *crown and scepter* are taken for the royal authority, of which they are the *signs*. So the Latins signified *peace* by the *toga*, as *cedant arma togæ*, &c.

Sixthly, *abstract* terms for *concrete*. So *justices* denote the judges, and the *watch*, the watchmen. And Virgil says *noctem custodia ducit infomnem*.

The choice of names is not a matter of indifference to those, who wish to argue accurately; when they are obliged to describe their feelings or thoughts by metaphoric expressions, they will prefer the simplest; those with which the fewest extraneous associations are connected. Words, which call up a variety of heterogeneous ideas to our minds, are unfit for the purposes of sober reasoning; our attention is distracted by them, and we cannot restrain it to the accurate comparison of simple propositions. We yield to pleasing reveries, &c. 3 Edgeworth on Education, 8vo. p. 130.

SECTION IV.

RULES WHEREBY TO DISCOVER WHETHER THE PRO-
PER SIGNIFICATION BE LITERAL OR FIGURATIVE.

1121. All words, phrases, sentences, or discourses, should be understood in the literal and not in any figurative or typical sense, when the literal sense is consistent with reason, that is, with other known truths, whether physical, metaphysical, historical, or moral, the scope and intention of the writer, as elsewhere clearly indicated, or at least not contradicted by him ; nay, if contradiction to such truths appears, by the context or otherwise, to have been intended by the writer, his assertions must still be taken in the literal sense ; and the reason is, because the literal sense is that alone which was intended and designed in the primitive formation of language, the figurative being only a secondary sense, introduced either through necessity, or to give more strength or vivacity to expressions.

1122. But if the contradiction to known truths

truths be evident, or certain, or probable, and the intention of asserting it, neither evident, certain, or probable; but, on the contrary, either certainly or probably the reverse, in such case, the words, phrases, discourse, or narration, that involve that contradiction, must be taken in a figurative sense, or at least, as mere popular expressions, as shewn in No. 1094. For, when rational beings communicate their thoughts by any signs, it would be unjust, it would be injurious to assign to them, unnecessarily, an irrational meaning. It would be to suppose them ideots, liars, or ignorant, or cruel, as the case may be. And such strict acceptation were unnecessary; if any other were probable or possible.

1123. Hence, first, where the literal sense is *metaphysically impossible*, as in the phrase *inflamed with anger*, &c. it is plain the word must be understood *figuratively*.

1124. Secondly, if words understood in the literal sense, or the event they comprise, be contrary to the *laws of physical nature*, and inconsistent with the circumstances that should naturally accompany or succeed such an event, literally understood, and not evidently

dently intended by the writer to be taken in that sense, they must be taken figuratively. Thus, when Christ called Herod a *fox*, Luke xiii. 32, we must not suppose, (as some have done), that Herod was instantly transformed into a fox, a supposition inconsistent with history, but rather consider that word as a metaphor, denoting *art* and *cunning*, as Grotius and almost all interpreters have considered it.

So, when the prophet Isaiah says,* that *the wolf and the lamb shall dwell together*, this in the literal sense being contrary to the laws of animal nature, must be understood figuratively, denoting, that at a subsequent period, oppressors shall dwell in peace with their harmless neighbours. This figure is frequently used by Arabic and Persian writers, as the celebrated Sir William Jones has shewn.

¶ 125. Thirdly, when the literal sense denotes something *morally impossible*, being incompatible with what can with any degree of probability be supposed to happen in the

* Chap. xi.

general state of society, it must be rejected, and the words that convey it, must be understood *figuratively* of something approaching as near as possible to the literal sense; as when Christ requires, that *if the leg or hand scandalize you, they should be cut off*, Matth. v. 30. So *proverbial expressions* which are evidently absurd in the literal sense, must be understood *figuratively*, as they generally are by the people, among whom they are used. However, some wrong-headed Gallican Bishops in the fifth century, misapprehending the precept of Christ, Luke xii. 35, *Let your loins be girt, and lamps burning in your hands*, thought themselves obliged to wear girdles, and went about in an unusual dress; but a sensible pope of that age, represented to them that these words should be taken *figuratively*, and humourously asked them why they did not also carry burning lamps in their hands.*

1126. If it should seem *doubtful*, whether a word, or a sentence, or discourse, should be understood literally or figuratively, both being equally possible or probable, the literal sense,

* Fleury's Eccles. Hist. vol. v. p. 628.

as being the most natural, should be preferred.

1127. If the figurative sense be susceptible of *different* significations, that which deviates least from the literal, or, which is most conformable to the scope and intention of the writer, and least strained and far fetched, should be deemed the *proper* sense. Thus, St. Paul having said, Rom. viii. 19, *the earnest expectation of the creature*, (or rather, of *the creation**), *waiteth for the manifestation of the sons of God*; and, v. 22, *for we know, that the whole creation groaneth and travaileth in pain, until now*; Grotius thinks the *whole creation* meant the *universe*, even insensible beings, by a sort of prosopopœia; but Locke, taking the words also in a figurative sense, thinks they denote only mankind, particularly the Gentiles; and this interpretation being less strained, and approaching more nearly to what is literally possible, seems preferable to the first.

Whether the 14th Ode of the first book of

* So Wakefield translates it, or the *world* as Newcome interprets it.

Horace should be understood historically, or allegorically, has been much disputed; all indeed necessarily allow the address, *O navis*, to be a prosopopœia; but, some think, that Horace meant to dissuade a second voyage in a ship, already much shattered, indeed so shattered, that it were impossible it should again put to sea with any prospect of safety. Others therefore think, and in my opinion with greater probability, that by a *ship*, he meant the republic, which he meant to deter from a second civil war. The exact application of the whole to the circumstances of the times, may be seen in Dacier and Sanadon's notes, and Watson's Horace.

1128. A figurative expression ought to follow the sense of the context, and not wrest the visible meaning to something remote from the subject in hand.*

1129. Hence, metaphors should not be construed to denote a similitude, in every respect, but in that only, on which they are founded; *non enim res tota toti rei necesse est*

* Locke on Rom. ix. 21.

*similis sit, sed ad ipsum ad quod conferetur similitudinem habeat oportet.**

1130. Besides the figures here mentioned, commonly called rhetorical figures, there are others in all languages, called *grammatical figures*; these consist in certain constructions, contrary to the common and natural rules of the language, yet authorized by the practice of the best writers. But for these, I must refer to the grammars of Port Royal, which explain those of the latin and Greek languages, and shall only observe, that neither these nor the former figures, are in general capable of being literally translated into any other language, as may be seen on consulting Arias Montanus's version of the New Testament, and Pagininus's of the old. See Dr. Campbell's Philosophy of Rhetorick, vol. ii. p. 181, 182.

1131. The wisest men suit their language to the comprehension of those they address. Therefore, when they are aware that general truths, literally expressed, are not suited to the capacity of those they mean to instruct, they

* Cicero vel auter ad Herennium, lib. iv. cap. 46.

convey them in such figurative language, as they know will make their general purport more easily understood. Such is the famous apologue of Menenius Agrippa.

1132: Hence, their language must be suited to appearances, and to popular opinions, (unless it be their express intention to alter those opinions,) and not merely to such opinions as they themselves entertain. So, where St. Paul, 1 Corinth. i. 21, says, *it pleased God by the foolishness of preaching, to save those that believe*, it is plain his preaching was not foolish in his *own opinion*; his meaning therefore was, that it *appeared to others* to be foolish.

1133. Therefore, though figurative and popular language is not literally and logically true, yet it is *transcendentally* true; when it answers the general intent of the speaker, and is so understood by the hearer, and therefore in a sense fully equivalent to the literal.*

* See Priestley's Lectures on Oratory, Lect. xi. p. 76, in 4to.

SECTION V.

OF THE EQUITABLE SENSE.

1134. The equitable sense of words, phrases, clauses, discourses, or documents, is that which the express, or justly presumed intention of the author demands; it is, therefore, either *strictly* literal, or narrow, or enlarged, in order to make it coincide with the intention when thus discovered; such interpretation is called *liberal*.

1135. In conformity with the second general maxim, many rules are established. Its consonance with universal reason; cannot be better illustrated, than by the words of the immortal Grotius, on Matth. xii. 3. *Scire leges non est verba earum tenere, sed vim et potestatem; qui a prior et potentior est quam vox, mens dicentis. Ideo quoties certis indicibus comprehendi potest mens ejus qui legem scripserit, præferri debet mens dicto. Verum enim est quod apud Ciceronem lib. de inventione secundo legimus, nullam rem, neque legibus neque scriptura u.la, denique ne in sermone quidem quotidiano,*

atque imperiis domesticis, recte posse administrari si unus quisque velit verba spectare, et non ad voluntatem ejus qui verba habuerit accedere, &c.

Now the agreement of parties is a law to the parties.*

1136. The documents to which this mode of interpretation is applicable, are either *authoritative*, as statutes, and the laws contained in the Decalogue and New Testament; or *directive*, as awards and testaments; or *conventional*, as treaties and agreements. I shall briefly mention some few maxims relating to the first head, as being most general and important.

1137. The meaning and intention of a law, should be collected from the several parts of the act taken together, or from a single part, when not opposed by the collected sense. Also from the occasion of enacting it, ascertained by the history of the times, and an attentive retrospect of previous regulations relative to the same object, as well as of the nature of the act, whether it be *remedial* or *penal*, and other circumstances not necessary to detail here.

* See Powell on Agreements, p. 370.

1138. But, of whatever kind the law may be, it must be presumed, (unless the contrary be evident,) that the legislature, which in legal intendment, is the centre of national wisdom and justice, cannot have intended to enact what would be palpably absurd, idle, or inoperative, or unjust, or oppressive. Therefore, if the express letter of the act should direct or imply such gross deviations from wisdom or justice, it must be construed, so as to be rendered consistent with both, either by enlarging, restraining, qualifying, or even contradicting the letter of the act. Of this mode of interpretation, I shall produce several instances; this rule extends equally to the interpretation of the Holy Scriptures.

1139. Thus, first, if a person or thing be *misnamed* in a statute, yet, if it otherwise evidently appears, that the person or thing, so misnamed, is the object intended by the statute, by the agreement of the description with that object, and with no other, the statute shall have its effect thereon, 10 Rep. 57^b. Here the construction is *contrary to the letter*, that the statute may not be inoperative,

tive, and the description is a surer indication of its object than the name.

1140. Thus, secondly, though it is enacted in Magna Charta, chap. 11, that common pleas should not follow the King's court, (that is, should not be pursued in the King's Bench), yet, if in a real action, the writ be abated by judgment in the court of common pleas, and this judgment be reversed for error in the King's bench, the plea shall be proceeded upon there, *by necessity*, lest there be a failure of justice; so that the case must be deemed tacitly excepted out of the statute, 2 Inst. 23. This interpretation also is contrary to the letter of the act.

1141. Thus, thirdly, where a statute grants or allows the *greater*, it impliedly grants or allows the *lesser* of the same sort or kind. And where it prohibits or excepts the *lesser*, it impliedly prohibits or excepts the *greater* of the same sort or kind. See Moor's Reports, 853, 1 Roll. Rep: 404, and Hardr. 424. For, though such cases be out of the act, yet it were evidently absurd, not to include them in its implied meaning.

1142. Thus, fourthly, the statute of Westm.

2 cap. 9, having enacted, that *infants* should not be forejudged without mentioning *married women*, it was held, that they also were within the statute, 2 Inst. 375, as justice equally required it.

1143. Thus, fifthly, though it was enacted by a statute, 3 James I. that Popish recusants convict, shall stand and be reputed *to all intents and purposes disabled*, as persons lawfully excommunicated; and thence it was inferred, that they were not competent to bear witness, since persons excommunicated are not; yet a very able law writer, namely, Serjeant Hawkins, justly pronounces this inference too severe. For competence to testimony is an interest of public justice. 2 Hawk. P. C. B. i. cap. xii. sec. 6, and 1 Lofft, 263.

1144. Nay, it has been adjudged, that if a statute be against common right and reason, it shall be considered as absolutely void. 8 Rep. 118, and Dyer, 313.

Of Remedial Laws.

1145. A remedial law, is that which tends to remove a mischief, without annexing any particular penalty, or to compensate for some injury, as to give costs, &c.

1146. Statutes that aim at suppressing a mischief, acknowledged to be such at common law, are construed liberally, that is, favourably to the common law. And therefore it was held, that cases of a similar mischief, shall be remedied by the statute where it is declarative of the common law. C. L. 76, and 290^b.

1147. But statutes against mischiefs, not deemed to be such at common law, are to be construed *strictly*. See 2 Inst. 110.

1148. Where the general words of a statute comprise an act, in reality not mischievous, such words, though within the letter of the act, shall be deemed in reality out of it.

Thus, though it was enacted by the statute of Gloucester, chap. vii. that if a woman makes a lease for life of her dower lands, the reversioner shall have a writ of entry presently; yet this should be understood of a lease made
for

for another person's life, and not of a lease made for her own life. 2 Inst. 309.

Penal Laws.

1149. Statutes, whose principal aim is to punish the offender, are called *penal* laws.

1150. It is commonly said, that penal laws are to be construed strictly; but the meaning is, that they shall not be extended by doubtful and ambiguous words, and that the punishment shall not be increased beyond what the law requires. 2 Inst. 381, Hob. 270.

1151. Also the necessity of self-defence excuses acts that would otherwise be criminal, as breaking out of prison when on fire, &c. 2 Inst. 590.

1152. But, where a crime is without the letter of the act, yet if it be of the same nature as that within the letter, and equally capital, it is held to be within the statute.

1153. So the statute 25th Edward 3d, which makes it treason for a servant to kill his master, is extended to killing the mistress, being the master's wife. 11 Rep. 34^b, Plowd. 86, Hawk, P. C.

Conclusion.

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